

# MINING CONGRESS JOURNAL



OFFICIAL

PUBLICATION



MANHATTAN Conveyor Belt carrying concentrates at Morenci

## MANHATTAN RUBBER Salutes MORENCI for its Contribution to Copper Output

Another MANHATTAN Conveyor Belt operating with movable tripper



MANHATTAN Rubber is proud that Phelps Dodge Corporation selected MANHATTAN Products to help speed Copper production at Morenci.

MANHATTAN Conveyor Belts carry the huge quantities of ore...MANHATTAN Launder Linings resist abrasion of ore and concentrates to and from the flotation section, to thickeners, and of tailings to dam... other MANHATTAN Rubber Products perform equally vital functions... all sharing in this important project.

Morenci is one of the many vital war projects in which MANHATTAN Products work side by side with those of other manufacturers in a common cause. *Others include:* Aircraft, Shipbuilding, Steel, and Petroleum Industries.



**THE MANHATTAN RUBBER MANUFACTURING DIVISION**  
of RAYBESTOS-MANHATTAN, INC.  
EXECUTIVE OFFICES and FACTORIES • • • PASSAIC, NEW JERSEY

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# MINING CONGRESS JOURNAL

Vol. 28

AUGUST, 1942

No. 8

Labor shortages are becoming a serious threat to coal production, and the Coal Division of the American Mining Congress is presenting in this issue a comprehensive cross section of labor conditions throughout the industry. (See pages 39-45 and 56.)

This account shows that, for the most part, similar employment problems are everywhere present but vary in degree. All fields agree that coal losses are likely to result unless there is a combined Industry and Governmental action to maintain adequate and productive man power at the mines.

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*Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress*

Published monthly. Yearly subscription, United States, \$2.00. Canada and foreign, \$4.00. Single copies, \$0.20. Entered as Second-Class Mail Matter, January 30, 1915, at the Post Office at Washington, D. C.

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## THE AMERICAN MINING CONGRESS

309 Munsey Bldg., Washington, D. C.

Howard I. Young, President	Edward B. Greene, Vice President
David D. Moffat, Vice President	Donald A. Callahan, Vice President
Julian D. Conover, Secretary	

AUGUST, 1942



## An Abnormal Problem Gets a Normal Solution

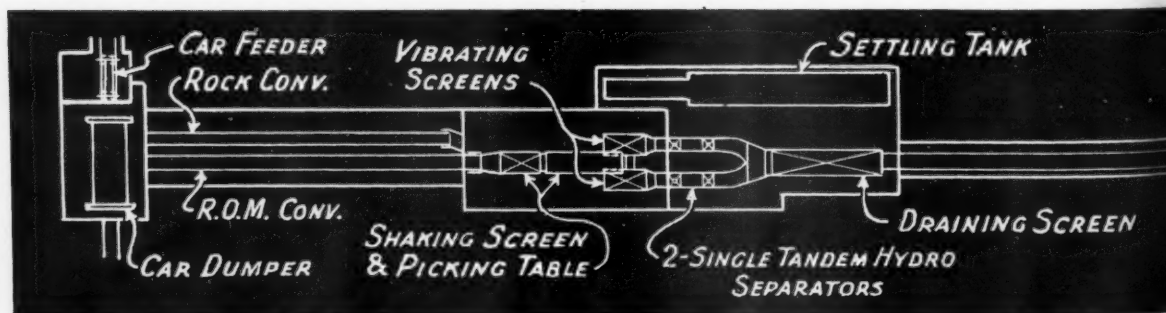
**T**HE Duquesne-Warwick mine, shown here, delivers coal to barges for a power plant. No rail haul is involved. The problem was to design a river tippie and preparation plant with a capacity of 600 tons per hour which would take maximum advantage of local conditions.

The manner in which the Roberts and Schaefer organization solved the problem is obvious from the picture. Without recourse to special methods or special equipment, the fullest possible advantage was taken of the natural and local

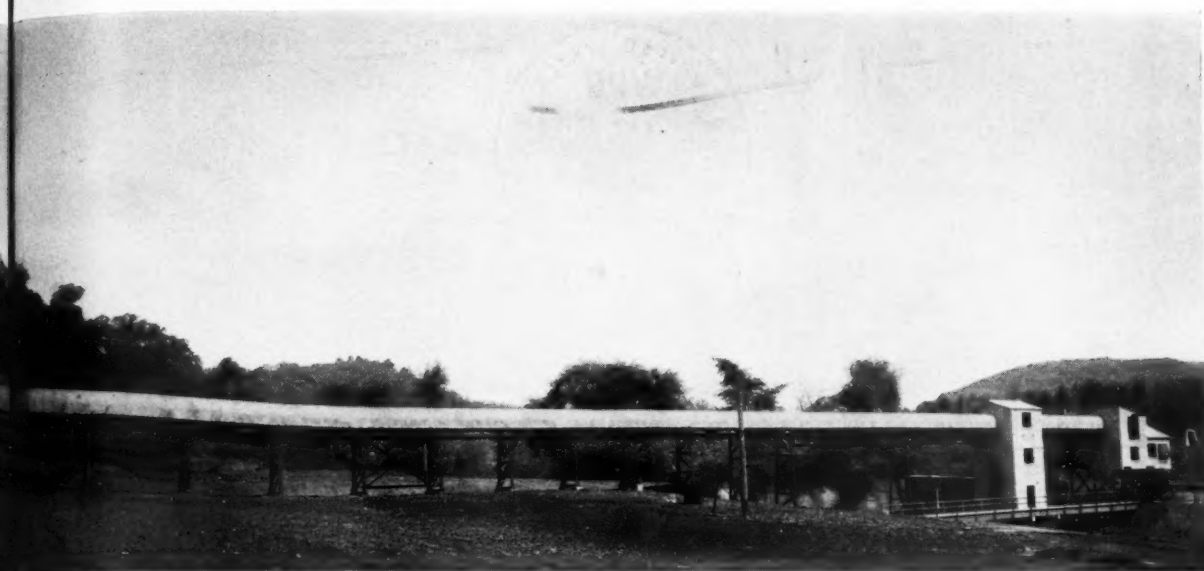
features of the mine and its location. The results are evident.

The output of the mine is hand picked and crushed to 5 inch. Screening divides it into 5x1" and 1x0" sizes. The larger size is washed in Tandem-Launder Hydro-Separators and the smaller size is bypassed. The two sizes are re-assembled and delivered by a belt conveyor direct to barges.

Every mine owner has unusual problems. His local conditions are different from most other mines. The value of the results he gets will de-







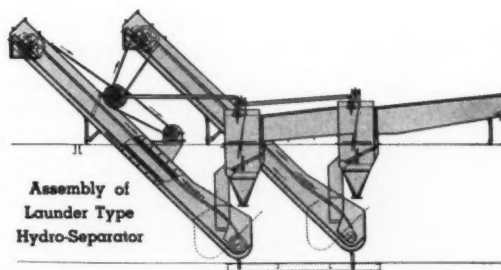
pend on how well he takes advantage of these conditions and adapts his plant to them.

The Roberts and Schaefer organization has definite advantages to offer in the development of a plant. Years of experience with large and small mines, and with mines in a huge variety of conditions has given R & S the accumulated experience that is necessary to make the most of a given situation.

Because we manufacture equipment for all kinds of cleaning processes, wet, dry or in combination, coal mine operators can be certain that our recommendations will be free from prejudice, and that the methods and

equipment selected will be those that long experience shows are best suited to local conditions and markets.

We shall appreciate the privilege of consultation on your problems.



## ROBERTS and SCHAEFER CO.

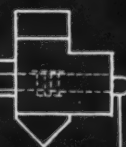
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PITTSBURGH, PA.

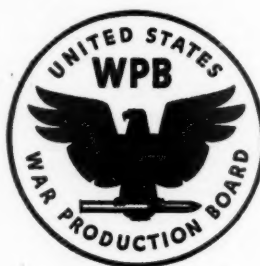
2017 "S" Street, N. W.  
WASHINGTON, D. C.

P. O. Box 570  
HUNTINGTON, W. VA.

BELT CONVEYOR



Scale 1" = 45'-0"



# An Emergency Statement to Industrial Executives

---

Manufacturers—large and small—have a special opportunity to aid the war effort—over and beyond the contribution they are already making.

That opportunity is Salvage.

***No matter how much scrap is dug out of the attics and basements of homes, the fence corners and gullies of farms, war production factories will still fall far short of the scrap material needed unless the manufacturers of America get 100 per cent behind the program.***

Six million additional tons of scrap iron and steel alone, as well as vast quantities of rubber and other materials, are urgently required to bring our war program to full strength.

Whether you are a lace curtain manufacturer or a maker of drop forgings the obligation is the same.

The job is more than simply collecting scrap material around the plant, or turning in the scrap which is created on the premises. It is a job of condemning obsolete machinery, clearing out unusable stocks, obsolete tools, dies, drills, fixtures, etc.

All unusable material, equipment, and stocks should be scrapped at once and put back into war production.

***The philosophy of "It may come in handy some day" must give way to the doctrine of "My country needs it now."***

Patriotic volunteer committees of executives are already hard at work on this problem in 421 industrial centers.

The Industrial Section of the Conservation Division has a corps of technical advisers who are prepared to work with all types of industries.

A thoroughgoing Salvage program in a factory can not only help meet

the present emergency, but can help prepare that factory for its postwar operations through the elimination of once wasteful practices.

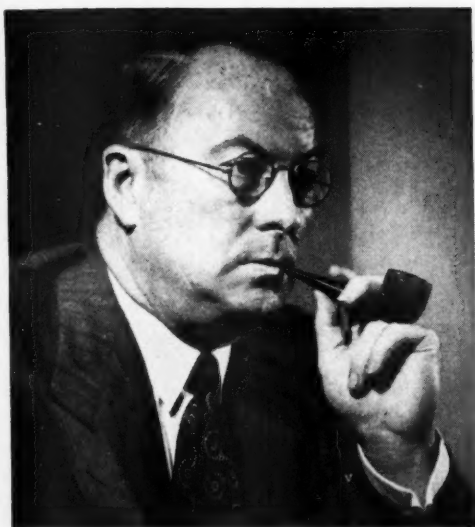
- 1 The first thing to do is to put some one individual in charge of Salvage in all departments of your business and give him not only the responsibility to act, but the authority to act.
- 2 The next thing to do is to get in touch with your local Industrial Salvage Committee and map out a detailed program with the materials and ideas that are available. Their program contains 17 simple steps.

If in any doubt, write or wire at once to the Conservation Division, War Production Board, Railroad Retirement Building, Washington, D. C.

*This job is being tackled by a democratic nation through the volunteer efforts and initiative of democratically managed industrial concerns, rather than through directives or compulsion as it is done in Axis countries.*

Every executive, every superintendent, every foreman and every worker in every plant can help.

The main thing is to get started now.



*All unusable material, equipment, and stocks should be scrapped at once and put back into war production. Please read this message and act now.*

*D. M. Nelson*

D. M. NELSON, CHAIRMAN, WAR PRODUCTION BOARD

*This message approved by Conservation Division*

## **WAR PRODUCTION BOARD**

*This advertisement paid for by the American Industries Salvage Committee (representing and with funds provided by a group of leading industrial concerns).*

**SCRAP FROM HOMES AND FARMS**—As individuals, search your home from attic to basement. Search your garage. Look at the old familiar things in a new light. Do you need them—or can you get along without them? Your country needs every pound of scrap iron and steel, other metals, rubber, rags and burlap to provide the fighting materials our armed forces must have. Take your scrap to the nearest Salvage Depot—give it to a charity—or sell it to a Junk dealer. . . . If you live on a farm, consult your County War Board or your farm implement dealer. In any case, your scrap will flow back into the blood stream of our war production.

# Plan ahead for your **HOLMES EQUIPMENT** to insure greatest War Production Efficiency . . .

★HOLMES engineers for years past have worked to give mines durable, dependable, smoothly-operating equipment designed

to perform with greatest savings and speed advantages.

Because of this pioneer work and continuous effort, HOLMES equipment was ready when the war-winning production emergency came, to ably and fully fit into the mine operating picture and to give the help so vital today. Our latest catalog gives full particulars on all of our equipment—consult this catalog to know how valuable HOLMES equipment can be now and for the future.

## **EMERGENCY REPAIRS**

Mines must run—repairs are needed from time to time—therefore, HOLMES has added an emergency repair department as an aid to mines in avoiding serious delays in production. The moment you need repair work, phone 1430 Danville, Illinois and a HOLMES representative will be on the way at once.

## **ROBERT HOLMES AND BROS.**

BINS - GATES - LOWERING SPIRALS - DUST COLLECTORS - SHAKING GATES

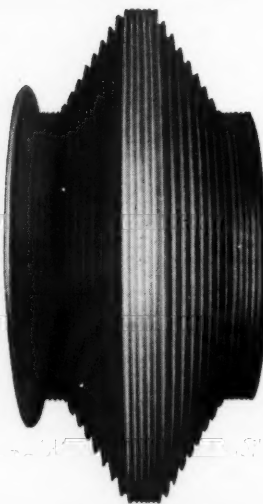
**DANVILLE, ILLINOIS**

## *Write regarding that* **REPLACEMENT EQUIPMENT**

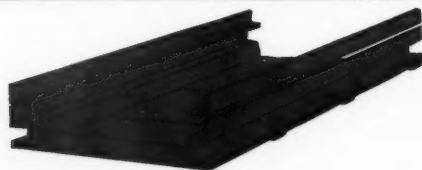
Mines today are looking ahead to their needs—we want to help you in this—try to foresee what you will need in HOLMES equipment and write us now so that we can anticipate our raw material requirements and plan our production accordingly, thus rendering a more complete service in keeping with Uncle Sam's War production program.



**SHEAVE WHEELS**



**WINDING DRUMS**



## **Sectional Bottom Conveyors**

Conveyor bottoms will wear out but you can avoid costly shut downs with HOLMES sectional cast iron bottoms. Worn sections may be replaced by one man in a few minutes without removing chain or flights. These bottoms are in use on a variety of standard conveyor troughs. Write us regarding your conveyor problems.





# YOU *can* MINE MORE ORE

## WITH THESE



The Hand-Rotated  
HR-48, 91 lb.

The Automatically  
Rotated R-48, 98 lb.

The Automatically  
Rotated R-58, 116 lb.

# Balanced STOPEHAMERS

Mining men—these Stopehamers are built to your specifications. The machine does the work—not the man.

Reports from mining districts in many parts of the world show that these stopers drill more feet of hole per shift because:

1. They are easy to handle. Operators like the balance and the positive, flexible feed-controls of these Stopers.
2. They are durable and stay underground. Their double air- and water-tube construction keeps them free from cuttings and dirt. The life of the parts is thereby lengthened.
3. They are the fastest Stopehamers we have ever built. They can help you mine more ore.

The following is a typical report from a large user:

"The R-48 works beautifully. Miners claim it is the fastest drill they have ever used, and I know we are penetrating the ground faster than I have ever seen done before. No trouble experienced with stuck steel, and the drill is making friends because of ease of control."

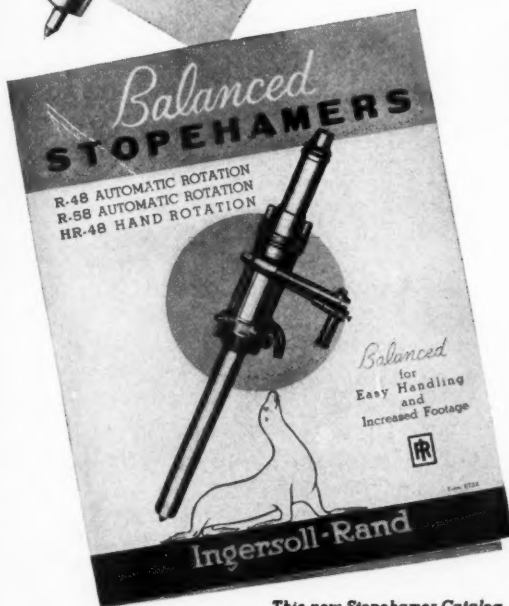
Write for catalog 2722 for complete details about these balanced Stopehamers.

## Ingersoll-Rand

11 BROADWAY, NEW YORK CITY

5-159

Branches or Distributors in other Principal cities the world over.



This new Stopehamer Catalog will show you how these balanced machines will help you mine more ore. It is yours for the asking.

**KEEP 'EM DRILLING!** Ask your supplier for oil meeting I-R Specification 433 — the new rock drill lubricant developed by Ingersoll-Rand.

## Tools for producing more coal



The industrial front and the home front need all the coal you can mine. You can't afford to lose one second's production by inefficient blasting.

Build up your production, control your preparation, by shooting with Hercules Permissibles—Hercoal, Red H, Hercogel, and Collier Brands. One of these will shoot

your coal efficiently—for either hand or mechanical loading.

An experienced Hercules service man will gladly consult with you in selecting the most effective Hercules Permissible for your mine.

Write for complete information.

### HERCULES POWDER COMPANY

INCORPORATED

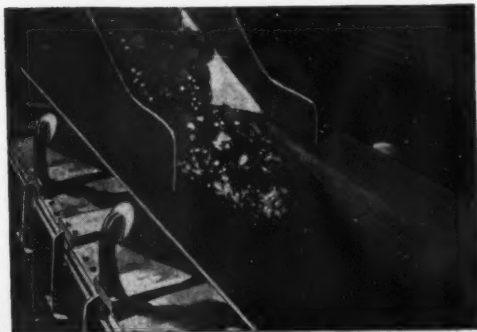
934 KING STREET ★ ★ WILMINGTON ★ DELAWARE

# HOW TO HELP YOUR PLANT IN THIS RUBBER CRISIS



## THIS NEW 48-PAGE BOOKLET

is for managers, engineers and plant operating men. It shows how to conserve rubber through proper handling, installation and care by methods such as those illustrated below. Other subjects covered are molded goods, rubber covered rolls, rubber mountings, rubber printing materials, mats and matting, grinding wheels, electrical wires, cables and tapes. Free copies will be sent on request. Write the Mechanical Goods Division, Dept. 25, United States Rubber Company, at address below.



**Protect Conveyor Belts** by using "V"-shape notch in loading chute to distribute fine material first as cushion for heavy lumps.



**Conserve Hose** by proper choice and installation of couplings to assure application without injury to hose tube.



**Extend Packing Life** by examination of equipment, and reconditioning worn moving parts before repacking.



**Preserve Rubber Linings** from danger due to "changed over" operations, higher temperatures and possible damaging effects of substitute materials.

## UNITED STATES RUBBER COMPANY

1230 Sixth Avenue • Rockefeller Center • New York  
In Canada: Dominion Rubber Co., Ltd. Toronto, Ont.

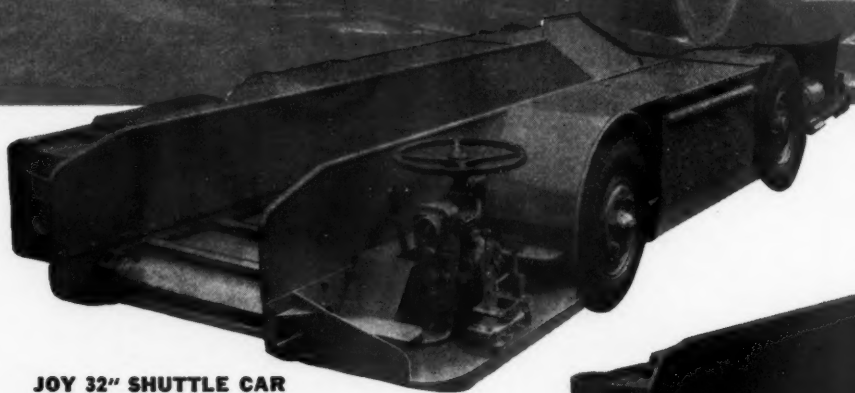


# THE RAILROADS OF AMERICA HAVE BEEN FORCED TO MODERNIZE

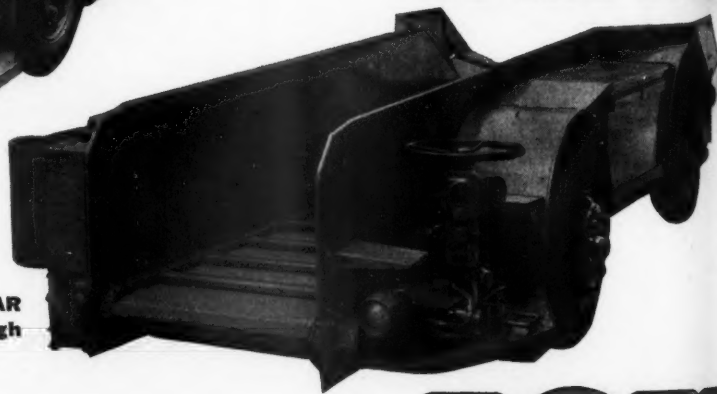
The slow, grinding, crawling freight is a relic of the past—  
Today, Modern, Streamlined . . . fast locomotives . . .  
move the nation's freight at a speed that often equals

the crack flyers—America's Railroads are on the move—  
and now they are really moving!

So it is in coal—old methods are a thing  
of the past. Mechanization speeds up output, modernizes  
methods—lowers costs. A Joy Engineer is available for  
counsel at your convenience.



**JOY 32" SHUTTLE CAR**  
3½ ton capacity for low  
seam operations.



**JOY 42" SHUTTLE CAR**  
6 ton capacity for high  
seams.

**THE HORSE AND  
IN THE COAL**

# JOY



**BUGGY DAYS ARE OVER  
INDUSTRY . . .**

**JOY 11-BU LOADER**

A heavy duty machine of  
high capacity, 8-10 tons  
per minute.

**JOY 14-BU LOADER**

A high capacity low vein  
machine . . . only 26" high  
. . . 5 tons per minute.

**WHATEVER  
YOUR PRODUCTION  
PROBLEM  
MAY BE -**

*Consult a  
Joy Engineer*

**MANUFACTURING CO., FRANKLIN, PA.**

# "KINKS" in wire rope help no one but Schicklgruber . . .



*Avoid them and you save both Time and Steel*

To the experienced wire rope user it may sound trite to say wire rope is a costly machine and must be treated as such. But there may be young fellows under you handling Roebling rope today who haven't learned by experience, and it's up to you to see that nothing they do will waste the valuable time and rope steel so vitally needed. Unloading the reel is just one way that a beginner may damage a rope. So tell him first that a reel of rope, like a motor or other piece of valuable equipment, should be handled carefully and not dropped from a truck or platform. Nor should it ever be moved by *prying against* the coiled rope.

But it's in kinking that the most serious damage is likely to occur. A kink starts as a loop like this!

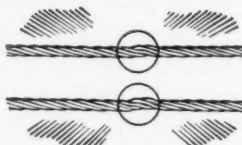


If it gets pulled tight, the damage has been done. The uniform relative position of the strands and wires has been disturbed—causing unequal stress distribution and abrasive wear that brings early failure at this point when the rope is put to work.



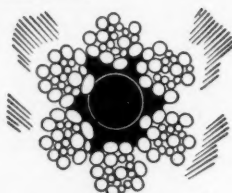
Even though you think you've straightened out a kink, looseness and high strands will appear. Because as the rope straightens

after kinking, an extra twist is thrown into the strands that can never be removed. Here's a kinked rope under 10,000 pounds tension, and below it the same rope after the tension had been relieved . . .



But notice that the kink remains. That means very severe abrasive wear on the high strands and abusive strain on the drawn strands since they carry more than their share of the load. To show you what happens to the drawn strands inside the rope, here is one cut through at the kinked section.

Notice how the hemp center is compressed; some strands are drawn in and others forced out.



All right, kinks are wasteful...but it's just as easy to avoid them as it is to put them in. Remember, kinks start as loops—caused in

most cases by taking rope from a stationary reel or coil. *The remedy is simple*—always unwind wire rope straight ahead by rotating the reel or coil. Don't let the reel get going faster than your rope is coming off. Always keep some tension on the rope if at all possible. Most people put a shaft through the center of the reel and jack it up—as shown in the big illustration at top. If it's in a coil, simply roll it along the floor like this . . .



It's as easy as that to avoid kinking during installation (where most kinks occur). Have these rules followed by every man who handles it, and you'll be on the way to getting all the *extra* service that's built into every inch of wire rope that bears the Roebling trademark."



JOHN A. ROEBLING'S SONS COMPANY  
TRENTON, NEW JERSEY  
Branches and Warehouses in Principal Cities

PROMPT SERVICE  
★ on essential orders  
★ from warehouse  
★ stocks or mill



**ROEBLING**  
*"Blue Center"*  
**STEEL WIRE ROPE**  
PREFORMED OR NON-PREFORMED



*Knee-deep in trouble...with pleasure!*

IT IS A COMMON SIGHT to see Mack trucks do things that, for most trucks, would be near-miracles. Why does this happen so often?

The reason is simple. *A Mack is more truck to begin with.* We do not build Macks just to stay even with somebody else, but to be beyond all doubt or question the *best* trucks in the world. *And an unequalled record stretching back over forty years says that's exactly what Mack trucks are!*

Mack Trucks, Inc., Long Island City, N. Y.

***Mack***

**TRUCKS**

FOR EVERY PURPOSE

ONE TON TO FORTY-FIVE TONS

BUY U. S. WAR BONDS

IF YOU'VE GOT A MACK, YOU'RE LUCKY...IF YOU PLAN TO GET ONE, YOU'RE WISE!

NIGHT LETTER

TO BUSY MINE OPERATORS



Here's the new Bethlehem No. 5 Steel Tie with a 40-lb. rail section.

You can get more efficient mechanization—and step up vital tonnages—with the new Bethlehem No. 5 Steel Tie. This stronger, sturdier steel tie, weighing 5 lbs. per ft., is designed for a 40-lb. rail, and where you have unusual bottom conditions. Ask Bethlehem for folder with complete information. Address: Bethlehem, Pa.



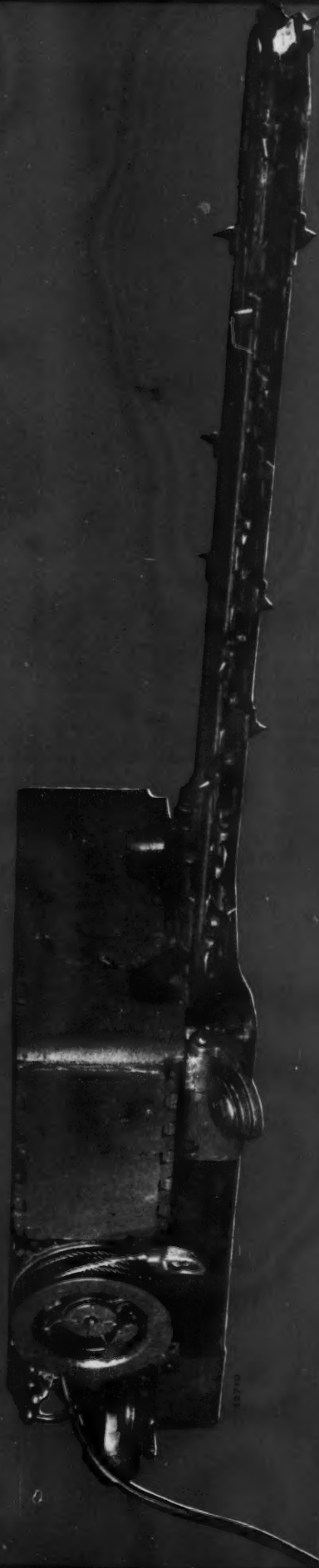
Compare this cross-section of the new Bethlehem No. 5 Steel Tie, in red, with that of the Bethlehem No. 4 (entire grey area) and with that of the Bethlehem No. 3 (dark grey area only). Revolving and stationary clips for the No. 5 are made proportionally larger and sturdier.

**BETHLEHEM STEEL COMPANY**





# *The Goodman 512 Shortwall*



Low enough for most seams, short enough to clear 5½ foot posting, the 512 is a fast-cutting, rugged shortwall designed for ease of handling and economy of operation.

*For complete details of this modern machine, call in a Goodman sales engineer.*

**GOODMAN MANUFACTURING COMPANY**

HALSTED STREET AT 48TH • CHICAGO, ILLINOIS

# TAKE *Extra* CARE of your CONVEYORS



**E**VERY PART of your materials handling equipment is made of critical materials . . . the metal in the idlers . . . the rubber and duck in the belting . . . even the bearings which enable the equipment to run smoothly and move quickly. So take *extra* care of your Conveyors.

See that all the idlers are in good operating condition . . . that they are lubricated properly and adequately. When lubricating Robins Idlers (which can be done from either side, due to patented design) it is easy to tell when enough grease has been added; it begins to escape through the far-side fitting.

See that the belt runs true; a crooked-running belt may cause not only spillage but also excessive wear. If your belting has a tendency towards side-sway, Robins Training Idlers will keep it straight in both carrying and return strands.

Where very heavy and lumpy material is handled, the excessive belt wear or actual damage imposed at loading points can be greatly reduced by installing Robins Rubberdisc Cushion Troughing Idlers . . . giving you longer belt-life.

Examine your conveyors critically. See whether you are doing justice to them, to yourself and to the conservation program by assuring that they are in condition to render maximum service in these times when maximum production is so vital.

If you need assistance or advice on the proper care of materials handling equipment, ask Robins engineers. Their knowledge is at your disposal wholly without obligation.

## ROBINS

CONVEYING BELT COMPANY

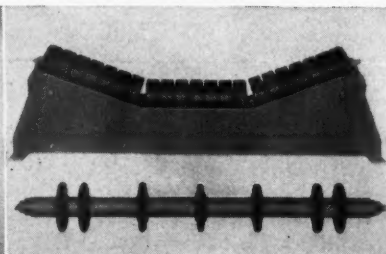
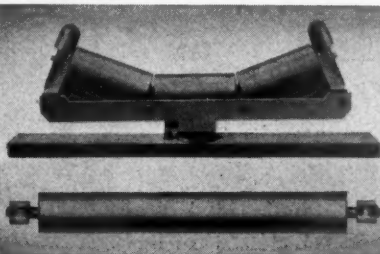
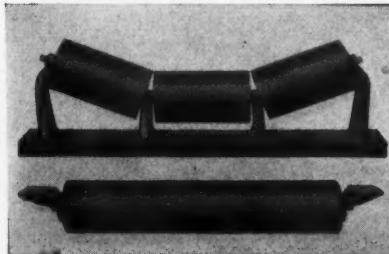
PASSAIC • N. J.

### For Material Aid in Materials Handling . . . *It's ROBINS*

Robins Roller Bearing Troughing Idlers are Timken equipped for smooth running. Made in steel and in one-piece cast-iron.

Robins Training Idlers prevent crooked running belts in both carrying and return strands.

Robins Rubberdisc Cushion Troughing Idlers (Timken equipped) absorb shock at conveyor loading points.



# MINING CONGRESS JOURNAL

HARRY C. CHELSON  
Editor

Vol. 28

AUGUST, 1942

No. 8

## MAN LIVES NOT BY BREAD ALONE

REPORTS coming out of the anthracite region of Pennsylvania demonstrate the value of the War Production Drive conducted by the management, representatives of the workmen and the men from Donald M. Nelson's War Production Board who have accomplished the organization of over two hundred working "Victory Production Committees" in the mines.

Advancing the slogan, "Bury the Axis in Anthracite," these five-man production committees have been formed at each mine, three men representing the workmen and two men the management, for the sole purpose of increasing production to win the war by reducing absenteeism, removing obstructions to production and acting upon workmen's suggestions for the improvement of performance.

Emphasizing that miners are the soldiers of production, the committees make it clear to everyone that it is the job of his mine for the duration of the war to furnish fuel for the factories, the locomotives and the war workers' homes in the northeastern section of the United States, where nearly 50 percent of our production of war munitions lies. The miners' representatives have been quick to say that miners are willing to fight in the war or to mine the coal necessary to carry on. They have told their men that one railroad car of coal is better than the equivalent of one tank car of oil and that there will not be enough oil this winter.

Mass meetings of thousands of anthracite workmen were held at Scranton, Wilkes-Barre, Hazleton, and Pottsville, stimulated by patriotic music, mining songs, and the well-loved folk songs of the workmen. The purpose of the War Production Drive was explained at these meetings by War Production Board speakers, representatives of the miners and of the management. Speeches and appeals were made by sailors from the Atlantic and the Pacific, telling the miners and their wives and children of the need of the men of our Army and Navy for the necessary munitions with which to carry on. Loudly voicing the questions, "Will you back us up?" and "Are you going to let us down?" these speakers drew roars of approval and assurances from the mining population of the region.

It is flatly stated by both the management and the representatives of the workmen that in this production campaign there is no selfish move or motive by either management or labor; in fact, representatives of the workmen have pledged themselves to steer clear in this patriotic work of any connection with industrial griev-

ances. In summing up to the mass meeting in the anthracite region the War Production Board spokesman urged the "Victory Production Committees" to keep the WPB informed of their accomplishments, saying, "We want to plow back into the field the best experience from all committees to build the Drive into a mighty oak tree whose strength will crush the Axis. This is America's Secret Weapon."

There is food for thought in the reports that are coming from the anthracite region of production increases due to material decreases in absenteeism and improved working spirit.

## REMOVE THE TAXATION HURDLES

IN a written report soon to be made to the Senate and referred to the Finance Committee, the Senate Silver Committee, after extended hearings in Nevada, Utah and Colorado, will make several extremely important recommendations with respect to the taxation of mines. The committee has been convinced by the testimony of large operators and small, of prospectors and investors, that if taxes are imposed upon mining which, because of their rates or their failure to give adequate allowance for return of capital, leave little or no hope of profitable investment, it cannot be expected that capital will be available for exploration and development of mines nor for expansion of existing operations.

Senator McCarran of Nevada, who conducted the western hearings, has already made a verbal report to the Finance Committee, and the formal report will follow immediately. This, it is understood, will stress the need for an excess profits credit based on normal profits per unit of production as provided in the amendment introduced by Senator Johnson of Colorado. Without this credit the excess profits tax upon mine income would, in reality, constitute a tax upon normal profits, heavily penalizing mines which have increased their production in response to the Government's call.

The committee has also recommended that producers of strategic minerals, as well as any other mines of short or uncertain life which have been brought into production to meet war needs and cannot expect to compete after the emergency, should not be subject to federal tax upon the proceeds of operation until the capital investment is recovered. The committee is asking that special relief provisions be provided, simple, free from technicalities and so framed as to make it possible for small operators to take advantage of them; that base period income be computed upon the average of three out of the four base period years, 1936 to 1939; that the excise tax on freight be eliminated; and that provision for withholding of tax at source, if found necessary, be at a flat rate for all employees.

Beyond question the expression in the Senate Silver Committee's report represents the actual and factual views of mineral producers from all the far western mining states, and for the sake of our country in its time of peril the Finance Committee and the Senate should take heed.





A 10-in. Pomona pump is installed in a drill hole, driven by a 100 hp. Westinghouse motor, in this pump house of the United Zinc Smelting Corporation, Missouri

## TURBINE PUMPS DO THEIR BIT FOR ZINC

One of the first problems in obtaining more zinc for the war effort from the Tri-State area is the unwatering of many mines. Turbine pumps are serving this field admirably for this undertaking.

By W. F. NETZEBAND

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Joplin, Mo.

**M**INING in the Tri-State Zinc-Lead District of Oklahoma-Kansas-Missouri is from relatively shallow depths, the maximum being 425 ft., with the major portion of the mining being from above 300 ft. Because of the shallow depths turbine type pumps have been found ideal for unwatering old mines and under certain conditions for unwatering virgin ground ahead of shaft sinking.

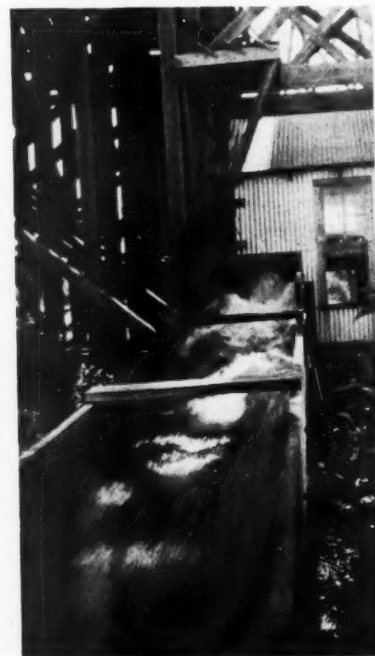
Several major unwatering projects have been successfully completed in the past decade by the use of this type of pump. In 1932 mining practically ceased in the Tri-State district and the lower portions of the extensive underground workings in the Picher, Okla., area filled with water. Through the cooperative efforts of the major mining companies two large turbine type pumps with a combined capacity of 6,500 g.p.m. were installed in February and May, 1933. Early in 1934 the major part of the water

was out of the mines and individual operators then unwatered the small pools that remained in their mines with triplex, duplex, or centrifugal pumps.

The other major unwatering project was inaugurated in January, 1935, when Frank Childress and associates undertook to drain the old Oronogo bottoms in Missouri. This project was completed by the Eagle-Picher Mining and Smelting Company after the project had been extended to cover the area southward through Webb City and Cartersville to Duenweg. During the period of maximum pumping six pumps were throwing 16,000 g.p.m. Pomona pumps of the following sizes and rated capacities were used on this project: two 14-in. pumps, capacity 4,000 g.p.m.; one 16-in. pump, capacity 6,000 g.p.m.; one 9-in. pump, capacity 1,200 g.p.m., and one 8-in. pump, capacity 800 g.p.m. The maximum head of water was approximately

200 ft. All the pumps were belt driven by electric motors. The successful completion of this unwatering project in the Oronogo bottoms made possible the operation of the Oronogo Mutual Mining Company's open pit mine which has been moving about 2,500 tons of ore and waste each 24 hours for the past six years.

A large number of turbine type pumps are in use in the district today. The most popular pumps are the Pomona, Peerless, Texas, Fairbanks-Morse and Layne-Bowler. Open type impellers are most generally used because in normal service the pumps will pick up sand and rock particles which get past the strainer on the foot valve. Water lubricated pumps are favored by most operators but some oil lubricated pumps are in service. Pump sizes (discharge column) range from 4 to 16 in., with a wide variety of combinations of bowl sizes and stages to fit the individual job. Many types of power are used, among them are electric motors, oil engines (diesel and semi-diesel), gasoline engines, natural gas engines and butane gas engines. The electric motors are 2,200-volt induction motors, 25 or 60 cycle depending on the location of the operation with General Electric and Westing-



This volume of water is pumped from one of the zinc mines operated by the Eagle-Picher Mining & Smelting Company in the Oronogo bottoms. The 14-in. Pomona pump located in the shaft is belt-driven by a 200 hp. 2200-volt induction motor

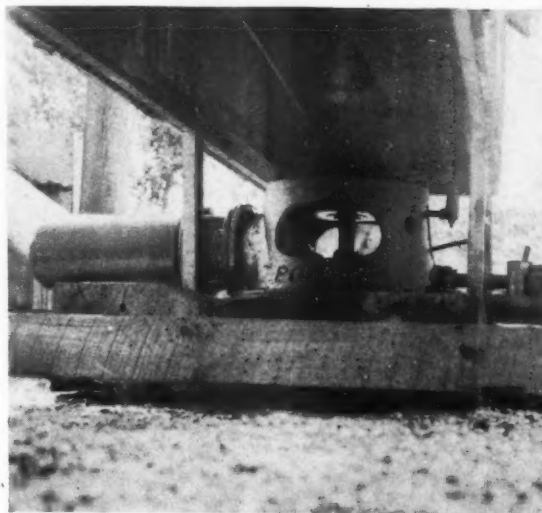


house motors most generally used. The oil engines are one or two cylinder semi-diesel Fairbanks-Morse or four-cylinder full-diesel Caterpillars. Many types of gasoline engines are used, from used automobile engines, to especially mounted Ford V-Eight or Mercury engines. Hercules, Budda, Waukesha and International engines also find favor. Natural gas engines are usually single cylinder Bessemer or Chicago-Pneumatic engines. For use of butane gas the Waukesha, Mercury and Budda engines have been used with the carburetion system changed to operate efficiently on this gas.

A more detailed description of a few present day installations may be of interest. The inflow into the Oronogo bottoms is so heavy that the Eagle-Picher Mining and Smelting Company find it necessary to pump from 12,000 to 14,000 g.p.m. They operate the 16-in. Pomona pump belt driven by a 335 hp., 2,200-volt induction motor and two 14-in. Pomona pumps each belt driven by a 200 hp., 2,200-volt induction motor. The latter two motors normally operate at a 10 percent overload. These pumps are installed in shafts and work against a maximum head of 200 ft. This heavy inflow is due in part to the large pool of water impounded in the mine workings of the old Webb City-Carterville camp and partially kept out of the Oronogo bottoms by an area known locally as a lime bar.

The United Zinc Smelting Corporation has leases on a portion of the old mining camp south of Neck City, Mo. It has installed two turbine type

This 10-in. Pomona turbine pump is installed in a 12-in. diameter drill hole unwatering a zinc mine in the Tri-State District



pumps to unwater the old mine workings preparatory to a resumption of mining for reserves disclosed by churn drilling. A 7-in. Pomona pump, belt driven by a 50-hp., 2,200-volt induction motor, is installed in a shaft. A second pump is a 10-in. Pomona pump belt driven by a 100-hp., 2,200-volt Westinghouse induction motor. This pump is installed in a 12-in. drill hole which was drilled into the old mine workings.

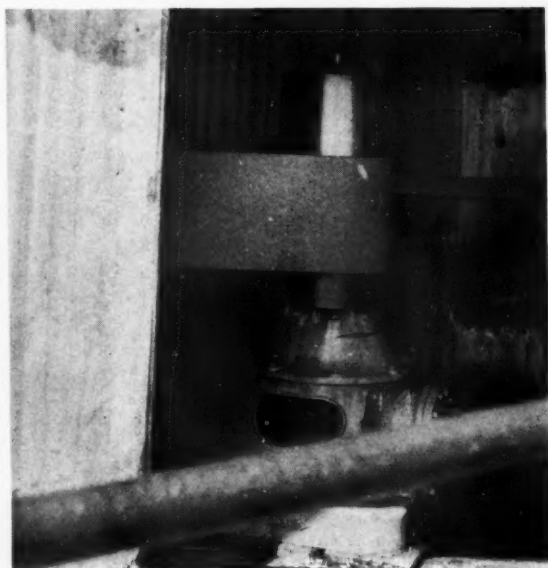
Kansas Explorations, Inc., has recently acquired a large acreage of low tenor sheet ground acreage west of Joplin, Mo. A large mill is being erected on the property and the old mine workings are being unwatered with a 10-in. Peerless pump installed in a shaft. The pump is belt driven by a 200-hp., 2,200-volt General Electric induction motor. The shaft is about 200 ft. deep.

The High Grade Mining Company has a 60-acre lease to the northeast of the Kansas Explorations, Inc.,

property described above. This company has recently completed the unwatering of its property and is handling the inflow with a 10-in. Peerless pump and a 4-in. centrifugal pump. At the start of the unwatering project two 10-in. Texas pumps (one later replaced by the Peerless pump), belt driven by 135 hp. Bessemer engines using natural gas, one 8-in. Pomona pump belt driven by a Caterpillar diesel engine and one 7-in. Pomona pump belt driven by a 50 hp. induction motor were in use. All pumps were installed in shafts. The depths of the shafts are approximately 180 feet.

Near Baxter Springs, Kans., acid water is encountered in certain areas. In some cases rubber lined columns were required and all working parts were bronze. Fortunately, at this time, this area is not very extensive.

Many companies, when unwatering virgin ground, have found it feasible to install a turbine pump in a drill hole located near the shaft site. If the ground drains well the area can be unwatered before the shaft is started and the shaft sunk dry. In some instances a turbine pump has been installed in the shaft during the sinking operation. A flexible hose is used for the foot valve section and the bowl section is connected to the main column with a readily removed coupling. The foot valve and bowl section are removed before blasting. This method is not too satisfactory, but it is easier than cutting a pump seat every 20 or 30 ft. and moving the pump and power unit. Also if heavy water is encountered unexpectedly there is no danger of drowning the pump.



At the Jasper mine near Joplin, Mo., the Kansas Explorations, Inc., has this 10-in. Peerless turbine pump installed in a shaft 200 ft. deep. The pump is driven by a 200 hp. 2,200-volt General Electric induction motor

# Slusher Hoists Aid in Reducing Tramming Hazards\*

Data collected over a number of years at the Montreal iron mine in Wisconsin show a steady reduction in accidents when chutes for tram car loading were eliminated by the use of slusher hoists in handling broken ore underground.

By D. E. FRITZ

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**E**ARLY in the search for information for this report the engineering department of the Montreal Mine made a graph from part of the data and it found that the present system of car loading made a notable contribution to mine safety. Subsequent data proved that the general safety education had born fruit before the present system of mining was under way. However, detailed study of the present method of handling broken ore underground, shows this method to be a still further advance in maintaining a good record in mine safety. Another source of data proved that the most dangerous mining operation, if executed with due respect for the dangers involved, can be performed with few accidents. Raising operations are generally conceded as one of the most hazardous in mining.

Raising operations constituted a large part of the development work up to the year 1928. In the branch raising system of mining, then in use, 4,745 ft. of raising were required for each ore block 350 ft. long x 120 ft. wide by 100 ft. high.

The mining and tramming methods used on each new level during the past 17 years required a great deal of thought devoted to improving the following operations: main level haulage, tram car loading, handling of mining supplies, ventilation of the sub-drifts, and mining methods.

This article describes that part of the present system which eliminated the former chutes used in loading tram

cars and in tramming itself. Reference to Fig. 1 helps to visualize the mining methods now in use in the Montreal mine.

First to be noted are the main level haulage drifts marked "A." These haulage ways are driven in the quartz slate approximately 250 ft. south of the footwall. The openings, where double tracks are necessary, are 14 ft. wide by 9 ft. high. Double tracks were considered essential in the shaft crosscuts, which average 1,200 ft. long, around a 100 ft. radius curve from the shaft crosscut, into the haulage drifts. This latter distance is sufficient to allow three tramming trains, each usually 100 ft. long, to wait (without interfering with the movements of the loaded trains) one full train length clear of the curve into

the main crosscut. Each motorman on the three trains then, has a clear view of the turnouts into any of the loading crosscuts. A red switch indicator light informs the motormen that that particular crosscut has ore to be trammed and a train is needed.

As shown in Fig. 1 these loading crosscuts are spaced so they have 350 ft. centers. Two loading drifts are driven from the crosscuts, one east and the other west, for each orebody. These drifts are 17 ft. center to center, with the west drift close to the footwall. This spacing allows two tram cars to be loaded at one time, using both the east and west slusher hoists. Movements of the ore trains are regulated by the slusher operator by means of air whistle signals to the motorman. The loading slides are elevated five feet above the floor of the crosscut, which allows the cars to be well loaded.

The back of the crosscut at the slide is raised by extending cribbing above the crosscut timber and using poles to hold the back between the cribbing.

The drift from the ore raise to within five feet of the crosscut is sloped slightly for drainage purposes. The approach to the car loading-slide starts upward at this point, five feet from the crosscut. A short, straight drain pipe connects the drainage sump with



Motormen have a clear view of the turnouts into any of the loading cross cuts from the main haulage level. In the distance on the floor to the left of the track is seen an indicator light that signals a motorman, iron ore is ready for tramming from that cross cut

\* Presented at the Mine Safety Conference of the Lake Superior Mining Section, National Safety Council.

the ditch in the crosscut. When mucking, a plug is inserted over that end of the pipe in the drift. This plug is protected from the scraper by rails that line the bottom of the drift. The drain is easily cleaned. A distance of 37 ft. from the center of the crosscut to the center of the ore raise allows considerable ore to be accumulated by scraping from the bottom of the raise opening. The average time of loading a train of 12 cars of two tons each, using one slusher unit, is 10 minutes.

Two different schemes are followed to transmit power past the loading-slides, depending on conditions. If it is necessary for the locomotive to pass, the trolley is run in a wood trough, to one side of the opening in the slide. When it is only necessary to transmit power for electrical driven mine equipment, the trolley wire is anchored on the shaft side of the slide, and the power transmitted from the trolley to beyond the slide by a suitable insulated cable.

The equipment supplied each loading drift consists of: one 25-hp. double drum hoist, 50 ft. of  $\frac{3}{8}$ -in. wire rope, 100 ft. of  $\frac{1}{2}$ -in. wire rope, one 52-in. scraper (Holcomb type), one flood light, one signal whistle, and a 16-in. tail block.

#### Advantages are Gained by Using Slusher Methods of Loading Cars and Transferring Ore

These advantages are discussed under the following headings: development, hazards, accidents, efficiency.

**Development**—Table 1 shows the development required to mine an ore

TABLE I

	Branch raising. Cars loaded at chutes	Ore scraped in mining crosscuts direct to raises. Raises connected on main level with transfer-loading drift cars loaded with scraper	Ore scraped in mining crosscuts to transfer drift. Ore transferred on sublevel to ore raise. Ore loaded in cars with scraper
<b>MAIN LEVEL DEVELOPMENT</b>			
Haulage drift in ore 8 ft. timbers.....	700		
Haulage crosscut in ore 8 ft. timbers.....		120 ft.	120 ft.
Haulage drift in rock 14 ft. x 9 ft.....		380 ft.	380 ft.
Haulage crosscut in rock 8 ft. x 9 ft.....		460 ft.	460 ft.
Transfer-loading drift in ore 8 ft. timbers.....		370 ft.	120 ft.
Total main level development.....	700	1,330 ft.	1,080 ft.
<b>SUBLEVEL DEVELOPMENT</b>			
Mining crosscuts in ore 8 ft. timbers.....		4,630 ft.	4,630 ft.
Transfer drifts in ore 8 ft. timbers.....		1,140 ft.	1,140 ft.
3-ft. x 6-ft. manways in ore, no timbers.....		1,920 ft.	1,920 ft.
5-ft. x 7-ft. sub-openings in ore timbers.....	4,480		
Total sublevel development.....	4,480	7,690 ft.	7,690 ft.
<b>RAISE DEVELOPMENT</b>			
5-ft. x 10-ft. cribbed raises in ore.....		1,300 ft.	300 ft.
4-ft. x 8-ft. cribbed raises in ore.....	450		
4-ft. x 4-ft. cribbed raises in ore.....	7,215		
Manway raises, no timber.....		600 ft.	600 ft.
Ventilation raises in rock, no timber.....		100 ft.	100 ft.
Total raising.....	7,665	2,000 ft.	1,000 ft.
<b>TOTAL ALL OPENINGS.....</b>	<b>12,845</b>	<b>11,020 ft.</b>	<b>9,770 ft.</b>

Table 1 shows the development required to mine an ore block 350 ft. long by 120 ft. wide by 150 ft. high using the high pillar (50 ft. interval) sublevel caving method of mining, and one of the following three systems of handling the broken materials

block 350 ft. long x 120 ft. wide x 150 ft. high using the high pillar (50 ft. interval) sublevel caving method of mining and one of the following three systems of handling the broken materials.

Inspection of the table shows that (1) the branch raising system required 12,845 ft. of development as against 9,770 ft. for the present method; (2) total footage of raising

for the branch raise method required to 7,665 ft. against 2,000 and 1,000 ft., respectively, for the two systems making full use of slusher hoists.

**Hazards**—When the branch raise system was employed the main haulage level was at all times crowded with men, and traffic was heavy. This was the result of starting raises and constructing chutes a short distance behind the advancing face of the foot drift. The raising, sublevel drifting, cross-cutting and finally stoping would continue progressively as the main level drift was driven ahead. Timber and equipment had to be handled through the one or at most two drifts. A large part of the material needed in the sublevel had to be hoisted through the raise chutes, as double raises were only driven at 100 ft. intervals. In fact, it probably would not be much of an exaggeration to state that during the course of a few hours, at least one man of every gang employed on the level, sub-drift or raises would have passed through the main haulage drift at one time or another as they went for drill steel, timber, powder or other supplies.

This condition was considerably relieved on the 26th level where the branch raises were driven up from



The operator of the double drum slusher hoist brings the iron ore to the loading slide where it is dropped to the waiting cars below in the cross cut



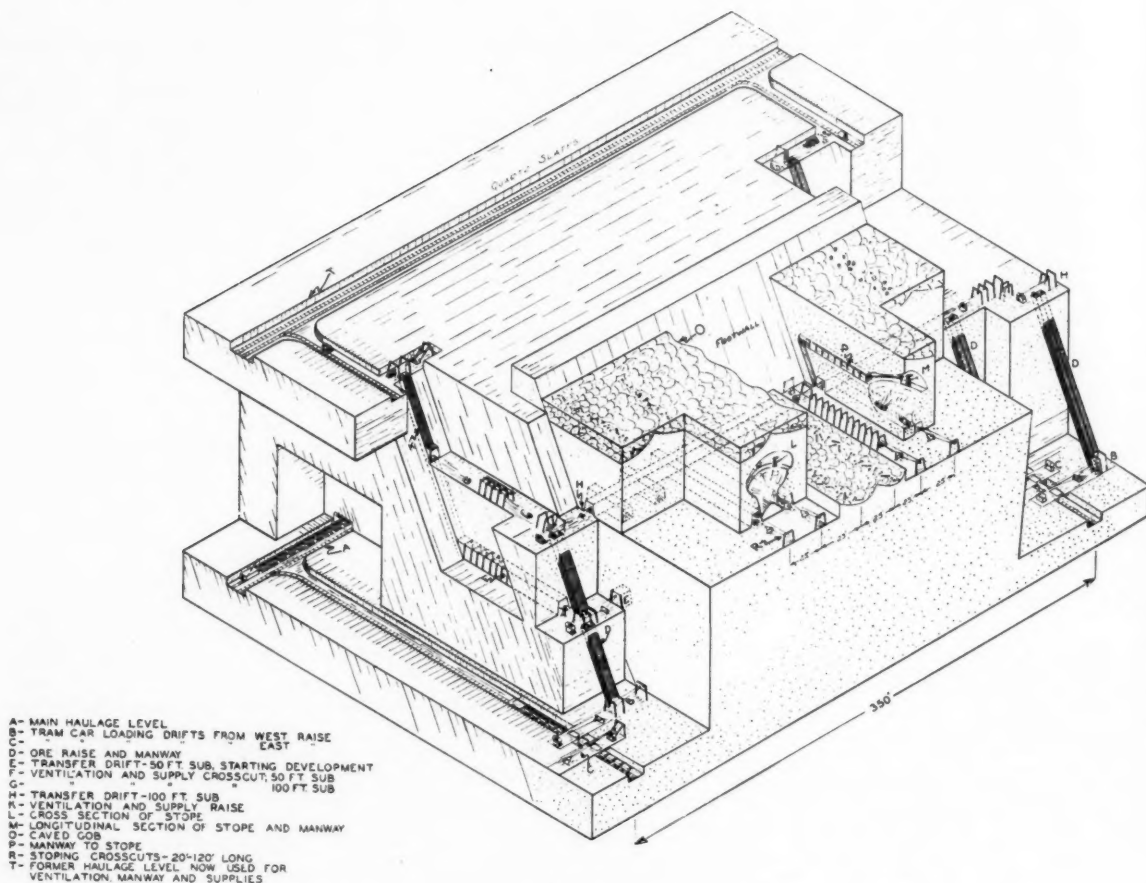


Fig. 1. Block diagram showing sublevel caving and tram car loading using slushers

crosscuts, which, in turn, were connected by a haulage drift. The activities in any one of these crosscuts could then be in progress, without interference from other main level operations.

The present system goes even further in reducing the amount of material handled through the main level. This is made possible by a ventilation and supply raise, driven in the footwall from the top sublevel to the haulage crosscuts on the level above. As the mining on this older level decreases, more of the timber, etc., for the sublevels below, can be handled through the rock haulage ways and lowered at the supply raise.

The elimination of hazards may be summed up as follows: (1) one loading slide now replaces 10 chutes formerly used; (2) rocks bounding from the chutes were hazardous for chute trammers, causing frequent face, chest and hand injuries.

The man operating the slusher is not close to the ore raise. Ore mucked

into the cars with the scraper does not fall from a height great enough to cause rock to bounce out of the cars or off of the slide; (3) ore falling through raises into chutes become packed, and required a great deal of barring, blasting, etc. With open raises off loading drifts, the ore falls in a loose pile and is always available to be mucked with the scraper method; (4) when handling wet ore in chutes, water would accumulate on top of the ore. Many times as the ore below was being loaded from the chutes into the cars, the compact ore and water would suddenly give way burying several tram cars. In the loading drift system the water has a chance to drain away from ore as it accumulates at the bottom of the raise opening; (5) in the open stope mining system used in one section of the Montreal Mine, the grizzly sublevel and tram car-loading chutes have been replaced with a transfer-loading drift. The ore from the stope raises, which are at 25 ft. intervals, is moved by slusher hoist to

the car loading slides. This method eliminates expensive grizzlies and chutes on the tramming level.

All chunk blasting can be done in the transfer drift. This is especially appreciated in low ore bodies, where the ore would otherwise have to be blasted direct into the raise and chunks blasted in the chutes.

**Accidents**—The accident frequency graph in Fig. 2 has been made up from data obtained from the Montreal Mining Company's compensable accident record books.

The frequency of accidents is based on per 1,000 tons of ore handled, rather than per 1,000 man shifts worked. This departure from the usual comparison was made in order that the results of any efficiency gained in the change in tramming method would show up on the chart. It was considered justifiable in doing this because if the method allows more ore to be handled, at the same time exposing fewer men to the hazards, it can





A better view of the slide and the accumulated ore in the sublevel at the bottom of a raise seen in the background

properly be considered as a step forward in safety.

The accident potentiality of the mining systems is based entirely on the frequency and not on the severity. This basis was taken after collecting and studying the accident data for the last 21 years. It was found that even a slight accident, for instance, a rock falling and injuring a finger, indicates the possibility of an accident which might have occurred to the man in such a way as to cause a very severe injury.

Table 2 lists the production and accidents by years from 1920 to 1941, inclusive. The accidents caused by the hazards connected with handling ore at chutes, tramming, raising or running slusher hoists are classified as to source. The accidents are listed by the number occurring and the days lost per year. The days lost per year for each classification of accident were recorded so that the severity of the injuries by years can be observed.

Although the frequency has undergone a decided improvement, the severity of accidents classified as to tramming, raising and slusher operations would appear to continue to be of a severe nature judging by the number of days lost.

During the period 1926 through 1927, the frequency of all types of accidents, both surface and underground, dropped very sharply. This was due entirely to the fact that safety education was beginning to show up in practice. No changes in mining or tramming methods were started until the end of 1927.

Starting with developments planned after 1927, the mining and tramming

methods underwent several changes, each change a step further toward the complete elimination of the chute. The chute accidents had practically stopped by 1927. See Fig. 2.

From 1926 through 1941, there have been four chute accidents. During the low production years of 1933-1936, many men were engaged in repair work. A few tramming accidents during that period caused the rise in that frequency curve based on the production.

With the introduction of the double drum slusher hoist in underground mining, new hazards had to be recognized and rules made to govern safe practice. During the first four years of this period of becoming more familiar with these hazards, two accidents occurred a year during the period



The loading slides are about 5 ft. above the floor of the cross cut and serve as a means to load the ore cars from the slusher drift above

TABLE II  
Number of Accidents and Days Lost Per Year for Accidents Occurring with Various Operations.

Year	Production, Tons	Chute Accidents		Tramming Accidents		Raise Accidents		Slusher Accidents	
		Number	Days Lost	Number	Days Lost	Number	Days Lost	Number	Days Lost
1920	546,342	5	138	6	920	..	..	..	..
1921	151,138	3	95	2	35	1	300	..	..
1922	395,527	4	143	1	54	..	..	..	..
1923	792,942	20	665	11	649	3	67	..	..
1924	798,006	20	462	8	340	2	92	..	..
1925	912,056	20	445	12	799	2	20	2	127
1926	1,105,899	11	608	2	50	3	42	2	98
1927	1,163,116	..	..	1	40	..	..	..	628
1928	1,084,873	1	18	1	300	..	..	2	366
1929	1,270,370	..	..	4	361	..	..	..	..
1930	1,043,097	1	306	..	..	3	531	1	187
1931	753,992	..	..	1	327	..	..	..	..
1932	402,732	..	..	..	..	..	..	..	..
1933	210,289	..	..	2	1,094	..	..	..	..
1934	579,965	1	34	..	..	1	51	..	..
1935	678,127	1	141	..	..	..	..	..	..
1936	802,536	..	..	..	..	1	299	..	..
1937	953,810	..	..	..	..	1	406	1	632
1938	796,780	..	..	..	..	..	..	..	..
1939	808,973	..	..	..	..	3	155	1	67
1940	1,015,463	..	..	..	..	..	..	..	..
1941	1,080,136	..	..	1	83	1	24	2	200

ACCIDENT FREQUENCY  
PER 1000 TONS  
ORE PRODUCTION

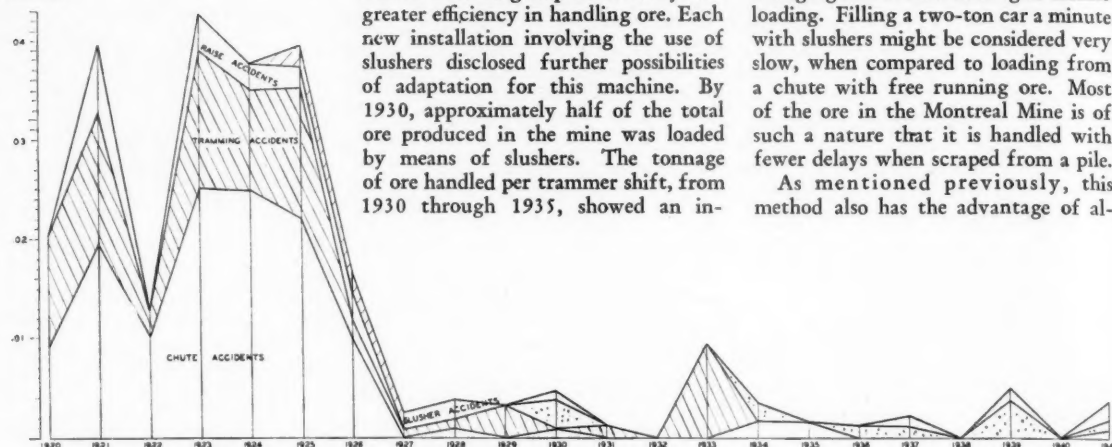


Fig. 2. Frequency of accidents occurring with certain operations such as chute loading, trimming, and slusher mucking. The accident frequency is based upon per thousand tons ore production by years 1920-1941

1924 to 1928. See Table II. During the next 13 years, that is up to 1942, five injuries involving slushing operations were recorded.

One slusher operating accident in 1941 accounts for 167 of the 200 days lost, charged to this source. This accident was slight but it involved a back strain which became complicated. A study of the accident record indicates that the hazards resulting from slusher operations can be forestalled by observing a few rules for good practice.

**Efficiency**—Starting in 1927 the method of loading tram cars in the Montreal Mine was altered as each new level was planned and developed.

crease of 66 percent over the tons handled per trammer shift during the period 1927 to 1930.

The proportion of the ore loaded with slushers had increased to 84 percent of the total by 1939 and well over 95 percent by 1941. During this final period, 1930 to 1942, the efficiency in trimming further increased, so that now 76 percent more ore is trimmed per man than during the period 1927 to 1930.

This increased efficiency may be partly due to the fact that the ore on this property is very difficult to handle by means of chutes. A mine with very free running ore might

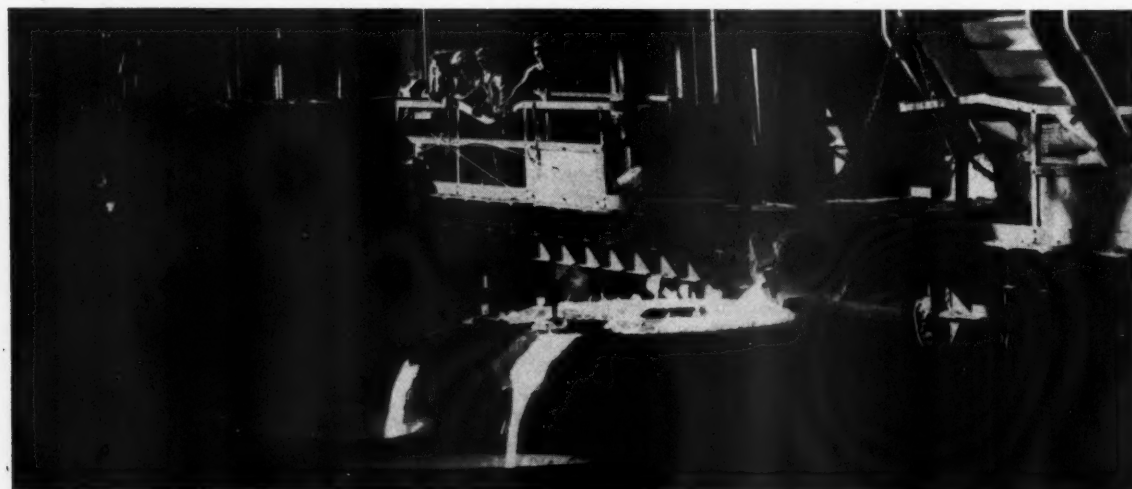
not find any increased efficiency by changing from chute loading to slusher loading. Filling a two-ton car a minute with slushers might be considered very slow, when compared to loading from a chute with free running ore. Most of the ore in the Montreal Mine is of such a nature that it is handled with fewer delays when scraped from a pile.

As mentioned previously, this method also has the advantage of al-

lowing water to drain from the ore accumulated at the bottom of the raises before loading.

The conclusion drawn from this study is that, by handling and loading ore into tram cars with slusher hoists, the hazards encountered when unblocking hung raises and making raise repairs are kept to a minimum, trimming levels can be maintained in good efficient order, delays from hung raises are eliminated, and overall efficiency of trimming is increased. It is the experience of the Montreal Mine that tram car loading with slushers practically eliminated trimming accidents.

The iron ore industry is supplying raw material in ever increasing volume for a victory flow of steel to "steam-roller" the Axis



# PREVENTION OF HEAT SICKNESS

As the mining industry foregoes the usual summer shut-downs and production climbs higher for the war program some thought should be given to understanding the influences of high temperature upon the human body. Simple precautions and methods of relief are offered.

**S**TUDIES in England have shown that the exposure of workmen in the mining industry to high temperatures has a pronounced effect on their susceptibility to accidents. Vernon, Bedford and Osborn found that, "The frequency rate of minor accidents (under 10 days) rose very rapidly with temperature. At the highest temperatures (80° or more) it was three or four times greater than at the lowest temperatures." They postulated that the fatigue induced by working at high temperatures was the major factor of the increase in accidents.

The effects of temperature on the incidence of respiratory diseases is also well known. The causative mechanism is generally related to rapid and extreme changes in temperature, to an extent that taxes the body in accommodation from hot to cold or vice versa.

Hard manual work in hot, humid places may lead to a number of physical ills summed up by the term "heat sickness." Included are heat cramps, heat prostration and heat pyrexia, which represent the pathological reactions of an individual to high temperatures.

There have been many thorough studies of heat sickness. The causative factors and the mechanisms producing the disability are well known to industrial physicians. Results obtained in the application of this knowledge to the prevention of heat sickness have been startling. The Youngstown Sheet and Tube Company recently reported that they had not had a single case of heat sickness in the last five years. In 1926 they had 77 cases. Preventive therapy had scored a 100 percent reduction.

Heat cramps represent an acute muscular attack primarily caused by the loss of sodium chloride, through excessive sweating. Most individuals stricken with heat cramps have not worked for one to three days prior to the onset of the malady. The ex-

## MEDICAL COMMITTEE

Industrial Hygiene Foundation  
Pittsburgh, Pa.

cessive losses of sodium chloride occurs because of maladjustment of the salt controlling mechanism in the sweat glands. In most workers, continued exposure to high temperatures will produce a gradual decrease in the salt concentration of the sweat as the individual's body becomes accustomed to the environment. If the loss of sodium chloride is too great before the defense mechanism becomes effective or if it does not function, heat cramps will result. They may be relieved almost instantaneously by intravenous saline solution, the effect being almost miraculous.

### Salt Tablets, Vitamin C Tablets, Jelly Drops Made of Glucose and Sugar, Have Been Recommended

Preventive measures for heat cramps consists of the addition of salt to drinking water or the provision of salt tablets to be taken with water. The salt solution should be approximately 0.1 percent sodium chloride, a concentration which will be tasteless to most individuals if the water temperature is about 50°F. The number of salt tablets that should be taken per day is dependent upon the size of the tablet. Industrial Hygiene Foundation insists in all cases, that the preventive program be under the supervision of a physician. His direction is required to adjust the program to conditions peculiar to each operation.

Heat prostration implies a systematic collapse which is believed to be caused by a type of circulatory failure which leads to exhaustion. There is no evidence of excessive salt loss and the most effective treatment has been found to be rest. Some authorities

recommend the use of glucose for prevention and for treatment. Jelly drops, composed of glucose and granulated sugar, and sweet lemonade have been recommended. It has also been claimed that the provision of 100 mgm of Vitamin C each day for workers exposed to heat has a very decided effect on their resistance to heat exhaustion. The use of salt water is not contra-indicated and there is some evidence to show that it is beneficial in maintaining normal body equilibria, thus assisting well being.

Heat pyrexia is the third effect associated with exposure to high temperatures. This condition has been commonly known as sun stroke where people have been overcome during periods of high summer temperatures. Extensive chemical studies on victims of heat pyrexia have revealed no characteristic change from the normal. There is good evidence to show that the disease is caused by a failure or collapse of the heat-regulating mechanism of the body. The victim should be removed to a cooler place and treated for shock. If the case is severe, heroic treatment designed to decrease the body temperature is required. The use of salt water is believed by some to be beneficial in preventing heat pyrexia for reasons similar to those advanced in the discussion of heat prostration.

It is reported that the first recorded use of salt as a preventive of fatigue and cramps occurred in a mining journal in 1924. The article described the results obtained when miners working at high temperatures and low humidity were benefited by its use.

With our country's need for the maximum output for the war effort, the mining industry should take cognizance of its past leadership in the field of preventive heat therapy. Effort should be directed toward the objective that no cases of heat disease in mining operations will occur this year.





Arkwright Coal Company's preparation plant

# MECHANICAL OPERATING METHODS in Northern West Virginia

**I**N presenting this description of the operating methods used at the Mona Mine of the Arkwright Coal Company, it is not our thought that we are doing anything particularly spectacular. However, during the past five years the mine has been modernized, new equipment has been installed underground and part of the surface plant has been rehabilitated and an account of how the modernization program has progressed and the results that have been attained may be of some interest to operators in other fields.

The mine in northern West Virginia is operating the Pittsburgh seam and was first opened twenty years ago with hand loading. During the early days of mechanization in the late 1920's, two loading machines of different types were tried but subsequently discontinued and no further attempts were made to mechanize until 1937 when mechanical loaders were installed. These proved successful and additional machines have been added until the mine is now on a 100 percent mechanical loading basis, producing about 3,000 tons per day with three shifts.

The seam outcrops about 200 ft. above railroad grade. The mine is a drift opening. Mainline trips are

brought to the tippie at the head-house, where the cars are emptied by a rotary dump and the coal is conveyed by a rope and button conveyor from the head-house down to the screening plant on the railroad. The coal on this property is fairly free from impurities and so far, we have not found it necessary to install mechanical cleaning as picking tables produce a satisfactory product. The screening equipment consists of shakers for the primary separation and vibrators and crushers for the final preparation of smaller sizes. The tippie has three loading tracks and beyond the tracks, as shown in the first photograph on the left, there is a truck bin. The Monongahela River is only a few hundred yards away and river barges are loaded by trucks hauling from this bin.

There are at present four operating units, each consisting of a track mounted loader furnished by the Jef-

frey Manufacturing Co., a combination cutting and shearing machine made by Sullivan Machinery Co., a 6-ton cable reel locomotive and one electric hand drill. In addition to this regular equipment we also have one "spare" loader, cutter, and locomotive for the mine. A 10-ton General Electric trolley locomotive is used as a relay for two operating panels and one 20-ton locomotive serves the main line haulage.

## Underground Operating Methods

The mining plan is the block system in which entries and rooms are driven 14 ft. wide on 86 ft. centers with cross cuts at approximately 95 ft. centers. This develops blocks 72 ft. x 80 ft. which are later recovered by splits and cross cuts; Figure 1 shows the method of pillar mining and the sequence of the machine cuts. A split is first driven through the pillar which divides the original block into two

By **E. D. GALL**  
Superintendent, Mona Mine  
Arkwright Coal Company



equal parts and each of these halves are mined by cross cuts, usually about 21 ft. wide. The cross cuts are driven through the block leaving a small fender of coal next to the gob, which is in effect an open-end pillar system. Considerable care is given to scheduling the pillar cuts so that a regular fracture line is maintained, and we are getting a high percentage of coal recovery.

The regular plan for the development as shown in Figure 2 is to drive five entries; these are on the same spacing as in the rooms so that in the final recovery, the entry pillars will be mined by the method now used in the room work. It will be noted that the workings are carried on 72 degree angles and in addition, the rooms and splits are started with a 45 degree cut. This has been found the best method for track mounted loading and greatly reduces the amount of curved rails that would otherwise be required if the workings were on 90 degree turns.

Each place is top cut and center sheared with a 9 ft. cutter bar. Du-pont permissible explosives are used and the coal to the left of the shear

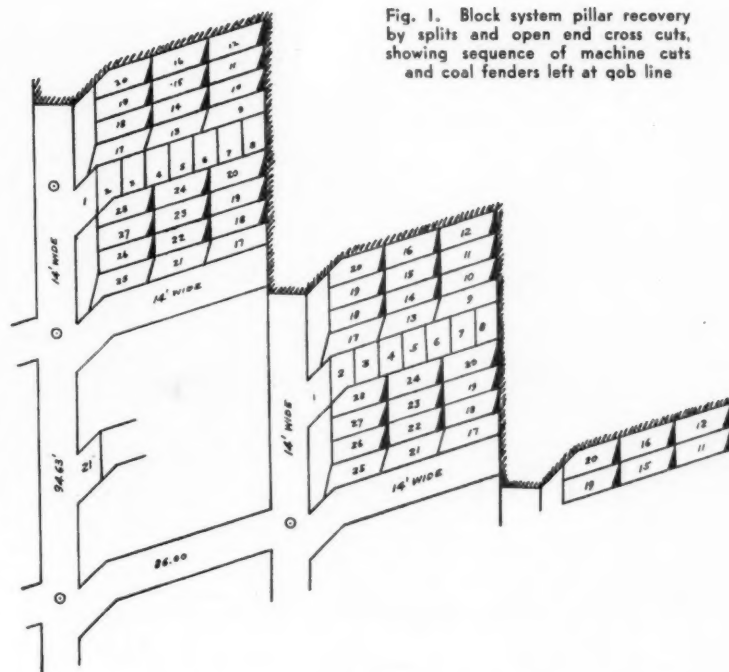


Fig. 1. Block system pillar recovery by splits and open end cross cuts, showing sequence of machine cuts and coal fenders left at gob line

is shot and loaded first. After this is cleaned up the right hand side is shot and loaded. Our experience has

shown that this method provides easier loading and also produces a better size product than when both sides of the face are shot and loaded together.

About 14 in. of top coal is left to form the mine roof. This is the usual practice in the Pittsburgh seam as the top coal is much easier to hold

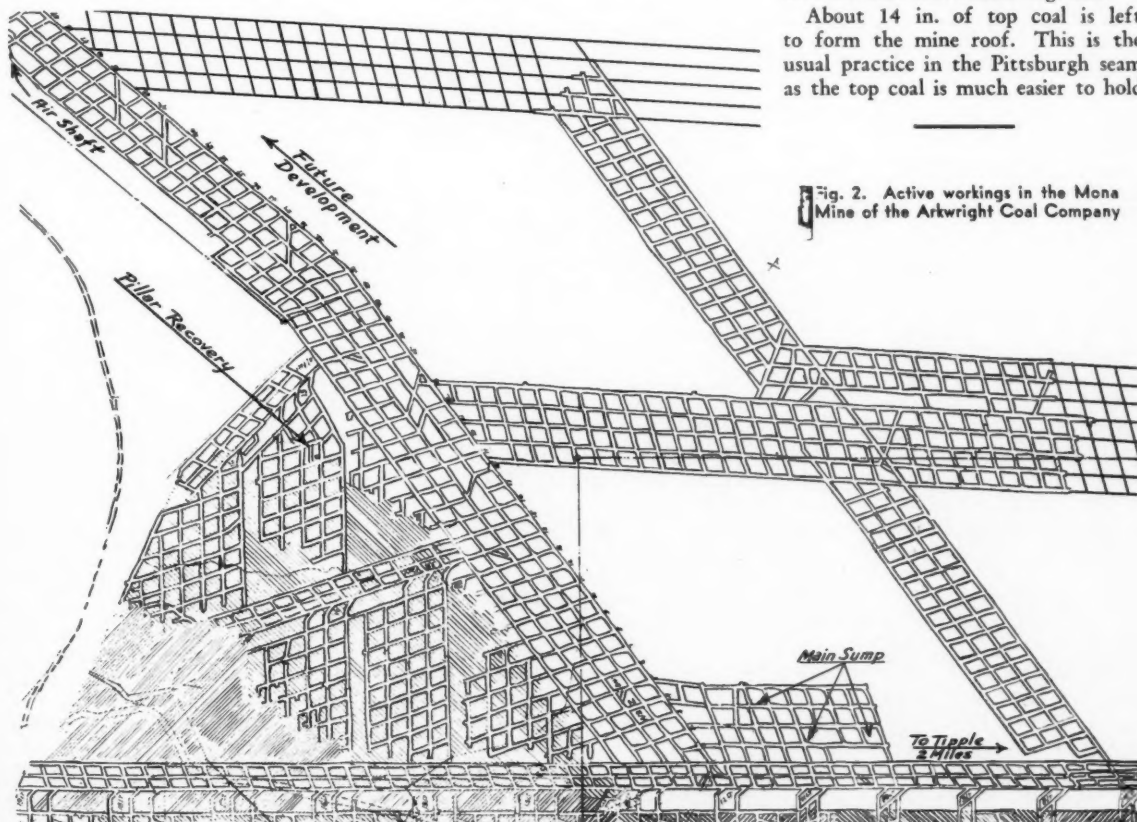
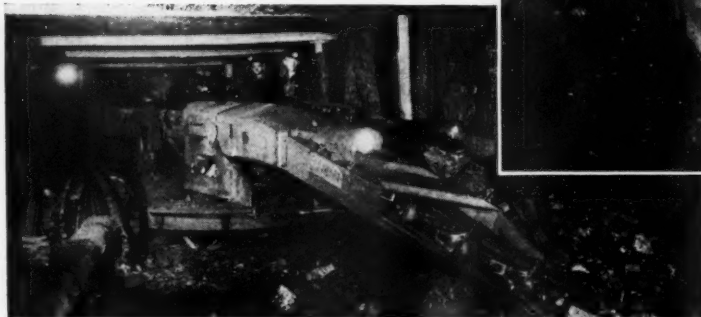


Fig. 2. Active workings in the Mona Mine of the Arkwright Coal Company

than the heavy draw slate which overlies the seam. Our timbering consists of round posts with 4 in. x 6 in. or 5 in. x 7 in. saved cross bars and during the loading, two extensible steel jacks are used as safety posts. Two timber sets are placed for each cut which means that five sets are used over each loading machine; this is in accordance with the West Virginia requirement.



Cutting and loading as performed with track-mounted machines

The main line track is laid with 60 lb. rails with treated wood ties; the entry track is laid with 40 lb. rail on untreated wood ties and the rooms have 40 lb. rail with steel ties. On account of the rapid advancement, the track is continually re-used and we have experienced some loss in the wood ties on the entries on account of "spike holes." In order to overcome this loss we have recently started the use of the "Ar-moored" tie which is a combination of steel and wood with rail clips to eliminate spiking.

#### New Mine Cars and Head House

For several years after the installation of the loading machines, we continued to operate with the mine cars that had formerly been used with hand loading. These were of wood construction having a capacity of slightly less than three tons. About a year ago it became necessary to replace the old cars with new equipment and after considerable study and investigation we decided that a 10-ton capacity would be the proper size for our conditions. Steel cars of this type were purchased from the Differential Steel Car Company.

Since one new car has the equivalent carrying capacity of three former cars, some real gains have been made in operating efficiency; both in the main line and service haulage. Under the old system, a main line trip consisted of 24 cars which had a pay-load of

72 tons of coal while our main line motor now hauls 12 car trips with a pay-load of approximately 120 tons of coal. This means a direct increase of 67 percent of coal for each main line trip. In the service haulage, there has been a very material reduction in the time delay for the car changes at the loading machine. A working place produced an average of 30 tons of coal which required mine car changes with the 3-ton car; with the large capacity equipment, three cars will load out a place which cuts this delay to about one-third of the former time.

The installation of the large type mine cars was accompanied by a complete rebuilding of the head-house. The former arrangement for the three ton cars had a kick-back dump which was set at right angles to the hill contour and required a curved track approach into the tippie. The new arrangement has a rotary dump set parallel to the hill contour so that the cars now are hauled through the tippie in a solid trip without uncoupling. A chain feeder pulls the cars through the dump and the track and switching facilities are arranged so there is no delay to the main line locomotive in bringing in loads and taking out empties. The new equipment for the head-house including dump, hoppers, and other facilities were furnished by the Link-Belt Company.

Under the rotary dump is a 20-ton coal hopper equipped with an electric driven fly-gate opened by a push but-

ton control to by-pass rock into a 35-ton refuse hopper, constructed of very heavy steel plate. The refuse hopper has a reciprocating feeder leading onto a conveyor which takes the rock to the main refuse bin.

The coal hopper has a reciprocating feeder which delivers to a 42 in. belt conveyor, 75 ft. long. This belt has a magnetic pulley for collecting tramp iron and discharges onto a short run-of-mine picking table. Two men are stationed here to pick out large pieces of slate and the rest of the product is delivered to the head of the rope-and-button conveyor which leads down to the screening plant below. This conveyor has a total length of 300 ft. and a vertical drop of 90 ft.

It is very seldom that there is enough gas to be detected with a flame safety lamp at any of the working places, although this mine is classed as gassy by the West Virginia Department of Mines. We, therefore, take all possible precautions to eliminate any explosion hazard by maintaining good ventilation, by rock dusting and by using water on the cutter machine.

A flat galvanized iron tank holding 150 gallons is installed on each cutting machine and the water in the tank is under 80 lb. pressure. A large tank car brings clear water from the outside to the working panels during the shift and the machine tank will take care of from four to five cuts. Experiments with wetting compounds have proved fairly satisfactory and in

all probability some type of wetting agent will be adopted.

As a part of the rehabilitation of the surface plant, we recently constructed a concrete block oil house which is in charge of an attendant who fills the oil cans for each shift supply. We are rather proud of this installation and wish to quote a comment made in the Federal Mine Inspection report.

"It is believed that the oil house is one of the best, if not the best, used at any coal mine. All barrels of oil are placed on steel racks. Steel drip pans are used to conduct the drippings to a storage tank. The oil house is heated by electric space heaters. No oil is permitted to accumulate on the floor and the interior of the building is kept clean and orderly. The oil house is a credit to the management and indicates that considerable time and thought had been given to its construction and maintenance."

#### Labor Conditions

The labor situation and the problem of maintaining a full operating force of experienced miners is demanding more attention than the usual problems of machine operation and coal preparation. A number of men have left our mines to go in the Army or Navy; some of these were enlistments and some were taken by the draft, but the total amount of losses from this source is actually the smallest contributing cause to our manpower difficulty.

The real trouble is due to absenteeism. In discussing this matter, it should first be stated that a considerable proportion of our employees are good workmen who are steady on the job and render satisfactory service, but unfortunately we do not have enough of this class to produce our output. The "floater" or "drifter" type under present conditions, with jobs easy to find, will not accept discipline particularly with respect to regular working time. As a result our labor turnover is greater than at any time during our mining experience; we normally employ a relatively large daily force of men for a three-shift operation, and during the past six months' period of December to June, our replacements amounted to 103 men.

In our belief, a large part of the trouble is due to the fact that our people, as a whole, do not realize the seriousness of the present war, and the miners do not seem to understand that coal is a war material. We know that the men in our community are patriotic Americans and feel sure that



The old head house above has been replaced by the new structure shown below



Repair shop for machine maintenance

as soon as they realize the importance of the part they have to play in the war program, most of our present labor difficulties will be eliminated.

Like everyone else who has gone from hand to machine loading, we have had to make a number of adjustments in our equipment and operating practices, but these have been gradual and it is only by looking back

over the five-year period that we realize how many changes have taken place. More improvements will doubtless be required; State and Federal regulations are becoming more strict, war-time operation has introduced a number of new problems, but the progress which we have made in the past enables us to face the future with confidence.



# The Sponge Iron Process in the Production of Steel

THE modern steel-making process has gradually evolved from an inefficient small-scale operation, utilizing tiny units, to a highly efficient one utilizing large units almost completely mechanized. The leading position of the United States in the steel industry is due to the possession of easily assembled high-grade raw materials and large-scale highly developed plants. The modern integrated steel operation is largely one of materials handling. The mining and transportation of iron ore, coal and fluxes, coking the coal in by-product ovens, smelting the ore with coke and limestone in blast furnaces, converting the resulting pig iron into steel in the Bessemer, or in the open hearth when supplemented with scrap, and fabricating the resulting steel ingots in the shapes of commerce all are done on a huge scale, mostly by machinery, the majority of the labor being employed either in operating the machine or keeping it in repair.

Small unit operations have given way to large ones, those that utilize materials as well as labor inefficiently have been replaced, and at the same time the quality and uniformity of the product have been greatly increased by the development of scientific knowledge and operating skills. Thus, the steel industry in this country is highly developed both mechanically and technically, in which respects its growth has been as noteworthy as it has in respect to size.

This nation's steel industry, both in size and in technical development, is the peer of them all. It has taken up useful innovations avidly and subjected them to the customary large-scale mechanical development. Examples are the modern blast furnace which operates with practically no attention and produces 1,000 or more tons of iron per day for five years without a shutdown for repairs; the evolution of the electric furnace from its small beginning of 30 years ago to the present highly effective device which will produce 100 tons of the highest quality alloy steel in a few hours, and finally the continuous rolling mills which have replaced the old,

The Advisory Committee on Metals and Minerals, the National Academy of Sciences, gives reasons why the production of sponge iron is not practical.

laborious hand mills and made possible the huge production rates that are so essential today.

The natural evolution of the steel process in this country was toward the open-hearth process which can handle large amounts of steel and iron scrap. Normally, the metallic charge consists of about half pig iron and half scrap. More or less than these amounts, in large variations, may be used; in fact, all scrap or all pig iron charges may be used although it is customary to convert some of the pig iron to steel in the Bessemer converter if insufficient scrap is available. Hence, more pig iron is used in times of scrap shortage; i. e., of high-rate production, and more scrap is used when it is plentiful.

## Ores of High Purity Required

Thus it is that the steel industry's use of scrap varies. Today, in order to reach the present large production rates, neither scrap nor pig iron has been available in sufficient amounts and new blast furnace capacity to produce pig iron has been built and more is under construction. Pig iron is ideal for conversion to steel. It may be carried molten to the converter and blown to Bessemer steel for commercial use or to a form for use in the open-hearth steel-making furnace in place of scrap. Pig iron may also be used in higher proportions in the open hearth if additional iron ore is also charged. This operation for best results requires ores of high purity.

Proponents of the so-called sponge-iron process have suggested that to supply the deficiency in scrap, plants be built to make sponge iron rather than pig iron, and claim that sponge iron can be made more cheaply than pig iron, and will serve satisfactorily as a substitute for scrap.

Sponge iron is made by converting finely divided iron ore to the metallic form without melting the ore or the reduced product. It is a sponge-like form of metallic iron intimately mixed or combined with such impurities as silica, alumina, sulphur, and phosphorous, originally present in the ore. Numerous processes have been developed for making sponge iron. Crushed iron ore is heated to below the fusing temperature out of contact with air, and subjected to reducing conditions that serve to remove the oxygen from the iron. In some processes pulverized coal is mixed with the ore; in others, a reducing gas (often hydrogen) is passed through the ore.

The sponge-iron process is not new. In fact, a crude form of it was apparently the first method used by primitive man to reduce iron from its ores and was a forerunner of the modern blast furnace. Interest in the process, in its numerous variations and its many modifications has persisted until the present time. The blast-furnace process took form in the fourteenth century, and over some 500 years has been gradually developed as the primary method for getting iron from its ores.

The first recorded definite attempt to make sponge iron was about 100 years ago. Since then hundreds of methods have been devised and millions of dollars spent in attempting to develop a commercial process. Interest has been intense in this country during the past 30 years and numerous large corporations have made serious although unsuccessful attempts to make the process practical.

In spite of a hundred years of effort, the last 30 years being very extensive, the process has gained no headway in this country and practically none throughout the world. At Hoganes, Sweden, a process was put in operation





This 65-ton capacity electric furnace will produce the highest quality of alloy steels in a relatively short time

in 1909, and has operated more or less continuously since then, producing a few thousand tons yearly. Some of this has been used in the United States for special purposes. In Germany, which lacks coking coal, the process has been exhaustively studied, but gained no important advancement up to the war. One plant of small capacity is said to be operating at Bochum, but such an operation cannot be said to be economic, or an example for the United States to follow, since here we have an abundance of coking coal cheaply available to every steel-producing region.

Whereas the modern steel-making process is adapted to large units, the sponge-iron process must be used in small units. A single blast furnace, for example, produces 1,000 to 1,200 tons of pig iron a day and employs

relatively few men for both blast furnace and coke-oven operation, while the sponge-iron furnaces now under consideration are expected to make only 10 to 20, and certainly not more than 50 tons a day, and would have to employ many times as many men per ton of output. These units are not adapted to automatic operation or to large-scale feeding of raw materials or handling of the product.

The blast furnace has been gradually increased in size and improved mechanically for several hundred years. In recent years advancement in saving of labor and fuel and in improvement of the product has been particularly marked. As a result the blast furnace and its auxiliary coke-oven plant are a model of smooth-running, efficient perfection. The sponge-iron process, on the other hand, is still undergoing

experimental development. Hence it is impossible to compare these processes on a cost basis. In view of the fact that nearly the entire cost of pig-iron production is represented by the cost of the raw materials and the handling of materials to and from the furnace, one is not justified in assuming that the operating or the plant costs will be less for the sponge iron than the blast-furnace process. On the contrary, engineering organizations experienced in the design and construction of iron and steel plants believe that both plant and operating costs will be higher for the sponge-iron process than the present process. History of American enterprise has shown that large-unit operations are cheaper to build and to operate per unit of output than small-unit operations. Hence one would expect the cost of the sponge-iron plant and its overall requirement of construction materials would be greater per ton of output than would a blast-furnace plant.

If these cost considerations are neglected and experimental work ultimately results in a sponge-iron process workable on a large scale, the product could be used to supplement our scrap supply. Even so, unless the sponge iron were made from ores of exceptionally high purity the removal of the impurities in the steel-making operation would increase the consumption of strategic materials, labor, fuel, refractories, fluxes and ferromanganese as to make its use decidedly inadvisable. Ores of such high quality are highly prized in the present steel-making practice. To take them from their present highly strategic use and put them into a product of unproven value would be unwise at a time when every pound of steel production possible is needed. Even if some of the high-grade ores were diverted to this use, they would still make a sponge-iron product containing 6 to 8 percent of these impurities and hence, having the above-mentioned disadvantages to such a degree as to make this use unwise from the points of view of consumption of critical materials and loss of production.

Moreover, the localities where cheap gas, suitable for reduction of ore to sponge, is available are distant from the high-purity ores, with the result that long, expensive freight hauls would be necessary. In Texas, where cheap, natural gas is said to be available, the ores are noted for their high content of impurities. The silica and alumina are high enough to result in

*(Continued on page 34)*

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a sponge iron so contaminated as to make the use of it in steel melting furnaces extraordinarily costly in rate of output, labor, fuel, fluxes, refractories and ferromanganese. Furthermore, the new steel plant operating in Houston, Tex., is building a modern blast furnace which is expected to be ready to operate in six months and to supply this plant with its needs. This blast-furnace operation will use a poorer grade of ore than any other in the United States. It will make use of coking coal from near-by Oklahoma.

#### Conclusions are Numerous

1. The sponge-iron process is not new. Having been available basically since before the adoption of the blast furnace and the open hearth, and having been before the iron and steel industry in its present form for over 30 years, the fact that this small-scale method has not been adopted is evidence of its inferiority compared to present large-scale processes.

2. One primary reason for the inferiority of the sponge-iron process is that it is not adapted to such large-size units as are the present commercial processes. Also, the necessary automatic materials handling devices, so highly developed and efficient in the present process, are not developed and are not likely to be developed until after many years of operation. Hence much more labor to do a given piece of work will be required for the sponge-iron process.

3. The iron blast furnace and coke oven not only handle tremendous tonnages of ore, flux, and coke and use a remarkably small amount of labor, but they require practically no repairs

over long periods. For example, a blast furnace will run five or more years without being shut down for repairs. The sponge-iron furnace, however, has not been proved to have these advantages because it has never been operated for a long, continuous period. From experimental results, however, one is justified in assuming that furnace repairs will be very frequent and costly in materials, labor, and supervision.

4. Sponge iron would represent a poor substitute for scrap as it is inferior in many respects, a few of which are:

(a) Sponge iron is finely divided and porous in nature and hence is more readily oxidized in the open-hearth furnace. Briquetting to overcome the fineness of division creates an additional operation requiring more labor, materials, and equipment. Even the briquetted or highly compressed product is still more readily oxidized than scrap, resulting in loss of iron in the slag and the need for more processing in the steel furnace. This would reduce furnace output and require more labor, more fuel, and more ferromanganese or other strategic reducing agent.

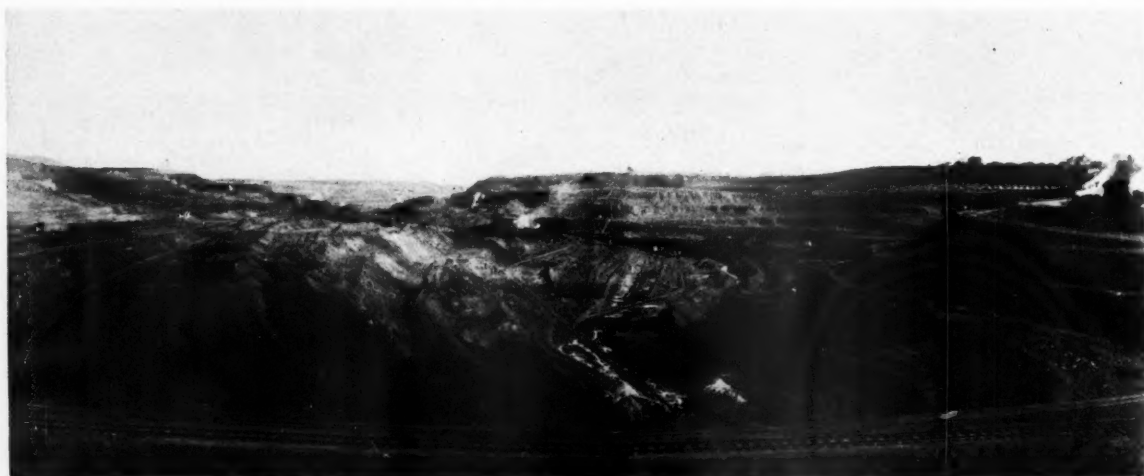
(b) Sponge iron, even when made from the purest iron ores available and when reduced by hydrogen, contains more impurities—e. g., silica, alumina, sulphur, and phosphorus—than steel scrap. This requires the use of additional labor, fuel, fluxes, refractories, and ferroalloys and results in a lower output per furnace. Iron ores pure enough to warrant the use of sponge iron in the steel furnace are not available for this use. There is an insufficient supply of such ore for the pres-

ent needs of our established steel industry. To take such ores away from the present uses would drastically interfere with production, now highly geared to a rate of production never before equalled. And even if this were done, the above disadvantages would exist, although to a lesser degree.

(c) The less pure ores that might be available for the sponge-iron process would produce a product high in slag-making constituents requiring excessive use of fluxes, refractories, fuel, labor, and ferroalloys which would make its use decidedly unwise in present steel-melting operations. To build additional melting facilities for this marginal product would be more uneconomic than to build new conventional blast furnace and open hearth or Bessemer plants for reasons stated under 4 above.

(d) Unfortunately, the requirements for large amounts of cheap gas and pure ores cannot be met in any one locality. To make use of the large amount of natural gas available in Texas, only the very impure Texas ores could be used. To convert the product into steel or a steel scrap, melting equipment would have to be built. The total materials of construction, time for putting into operation and labor required for such a development would doubtless be greater than for the conventional process. This is especially true if viewed in the light that the sponge-iron process is still experimental and many months of trial operation would be required before a commercial-size plant could be designed and built.

(e) If coal instead of gas is used as a reducing agent, still more slag-making impurities such as silica,



This large open-pit iron mine is one of several that supplies ore for the production of pig iron



alumina, and sulphur are introduced, making the sponge iron less suited than ever for conversion to steel. Moreover, coking coals are so plentiful and well distributed in the United States that the advantage claimed for the sponge-iron process, that it can use non-coking coals, does not hold. Even in Texas the blast furnace being built in Houston to supply pig iron to the steel plant there from Texas iron ores will use coke made from near-by Oklahoma coking coals.

(f) These observations are true for electric melting furnaces as well as for fuel-fired open hearths. The electric furnace is better adapted to melting sponge iron than the open hearth because its atmosphere is not so oxidizing. Being a more expensive melting unit and requiring electrical equipment and other strategic parts as well as electric energy, such a use should not be considered at this time.

5. Whereas sponge iron, as outlined in 4 above, is less satisfactory than steel scrap as a melting stock for steel production, scrap is less satisfactory than pig iron. Numerous facts attest to this.

(a) The steel industry pays more for pig iron than scrap.

(b) The use of pig iron speeds up the steel-making process; it may be added in molten form to the open hearth; it may be converted rapidly to steel in the Bessemer; it makes possible the use of iron ore in the open hearth, thus providing steel direct from ore by a simple means less expensive than by way of sponge iron.

(c) It is cheaper to handle pig iron, whether solid or molten, than scrap.

(d) The claim often made that sponge iron, being low in carbon content, is purer and better than pig iron is contrary to the facts. The slag-making impurities in sponge iron are costly to handle and the low-carbon content is no asset. The silicon and carbon contained in pig iron enter into the steel-making reaction and make possible the use of large amounts of iron ore in the charge. For example, by using 50,000,000 tons of pig iron in the open-hearth charge, about 4,000,000 tons of additional iron may be obtained from direct reduction of iron ore in the charge. This in itself represents an important method for direct reduction of iron ore, far more efficient and practical than the sponge-iron method.

6. From the viewpoint of efficient use of raw materials also, pig iron is superior to sponge iron. The by-product coke oven and the blast fur-

nace both make use of all the raw materials going into them. They produce much-needed by-products. In addition to the coke-oven by-products so essential in our war-time chemical industry, the by-product gas is used in the steel plant for melting and heating steel for rolling. The "waste" gas from the blast furnace is utilized in making power, melting steel, etc. The integrated steel plant needs more gas than it makes as by-product, and hence wastes none of it. Even the blast-furnace slag is put to good use for making cement, building roads, or as aggregate for building construction.

7. Because no accurate detailed estimates of the cost of commercial sponge-iron plants have been made, one is not justified in comparing plant costs of the sponge-iron process with the conventional blast-furnace process. However, the blast furnace has the theoretical advantage of lower cost and lower over-all requirement of construction materials because of its larger scale of operation.

8. Reexamination of the sponge-iron process from these angles shows definitely that the process, which has never been operated satisfactorily on a large scale in this country, presents no advantages that would warrant its development at this time. The Government would not be justified in putting money and energy into its development as a war measure. Devotion of time of the nation's production personnel to further attempts to commercialize this process would be wasteful. During the emergency those energies should be devoted to getting the most production of steel products possible by present established methods.

9. The steel-making process as practiced in this country is so highly mechanized and efficient and carried on in such large units that the adoption of the small-unit sponge-iron process, not possessing mechanical handling equipment and not readily adapted to use it, would be a step backward in our efficient utilization of labor and materials.

10. The undertaking of a program to produce sponge iron to supplement the supply of iron and steel scrap is inadvisable because even though sponge iron would serve as a poor substitute for scrap, it would do so at the expense of labor, furnace capacity, fuel and other essential raw materials. The net result would be a loss rather than a gain in over-all production.

11. If, as a result of a scrap shortage, open-hearth furnaces became idle,

then the steel plants would use sponge iron, if it were available, in spite of its disadvantages. If the establishment of the sponge-iron process requires diversion of materials of construction from essential uses such as ships, blast furnaces, aluminum plants, etc., then the value of the availability of sponge iron would be counteracted by loss of production in other places. Hence it is necessary to weigh the need for sponge-iron producing capacity against its cost in other strategic products. Actually it becomes a question as to whether a scrap shortage should be averted by construction of sponge-iron capacity or more blast furnaces.

12. The sponge-iron process is not established on a commercial size scale, and experimental demonstrations have not proved that large operations can be established with certainty in any given time. The production of sponge iron is still experimental, and furthermore much test work (costly in terms of steel production) would be needed before sponge iron could be used regularly for steel production.

13. The blast-furnace production of pig iron is a long-established operation, efficient in use of labor, raw materials, and by-products. Its product, pig iron, is the most satisfactory form of iron from which to make steel. Hence additional iron to supply the nation's steel requirements can best be made by the production of pig iron in the conventional blast furnace.

14. There are so many unfavorable aspects to the sponge-iron process that its development would appear to be a retardation of the over-all war effort. Diversion of our pure iron ores, diversion of electric furnace capacity or of materials of construction, diversion of raw materials, labor and energies would be a high price to pay for the development of a substantial production of sponge iron whose utility is so questionable. The establishment of sponge-iron plants would be wasteful in over-all productive effort.

15. The undertaking of a large research and development program for the production of sponge iron as a substitute for scrap is inadvisable at this time. Research and development are justified, however, for the development of a suitable process for making powdered iron for use in the new "powder metallurgy." Since the requirements for powdered iron are measured in thousands of pounds and the current price 10 to 12 cents a pound, processes similar to the sponge-iron process should apply.



# Determining Pressure Zones In Mine Pillars

**T**HOUSANDS of tons of zinc and lead ore, vitally needed for increased manufacture of war materials, will be brought into production with the aid of sensitive instruments developed by the Bureau of Mines, according to a report by Dr. R. R. Sayers, Director of the Bureau, to the Secretary of the Interior.

These instruments, by amplifying and recording subaudible noises that indicate pressure zones in rock and warn of impending falls of ground in workings, make it possible to recover with relative safety zinc and lead ore now tied up in old mine pillars that have been left standing to support the roof during earlier mining operations. Such recovery work is but one result of the Bureau's practical adaptation of the methods and equipment developed during six years of research in rock pressure problems.

Within the past two months Bureau engineers have tested their equipment in large zinc-lead mines of the Tri-State District of Missouri, Kansas, and Oklahoma. These tests proved that many pillars can be removed, thus providing much-needed ore, while protecting miners' lives and leaving surface buildings and terrain undamaged.

In one mine several large pillars of ore recently were taken out while Bureau engineers listened through their "geophones" and instruments for sub-

**Removal of large zinc ore pillars in the Tri-State District now under way by the Bureau of Mines. Use of a "geophone" determines relative safety of this practice.**

audible warning noises, amplified electrically up to ten million times. Plans have been made for immediate removal of 13 pillars, estimated to contain 30,000 tons of ore of a grade two and a half times higher than the previous average for this mine. There are many other pillars in the same mine that probably will yield similar quantities of ore. "It may now be stated with considerable confidence that in this district a large part of the ore tied up in pillars and previously thought to be unrecoverable can be removed safely under the methods of control developed by the Bureau of Mines," the Director said.

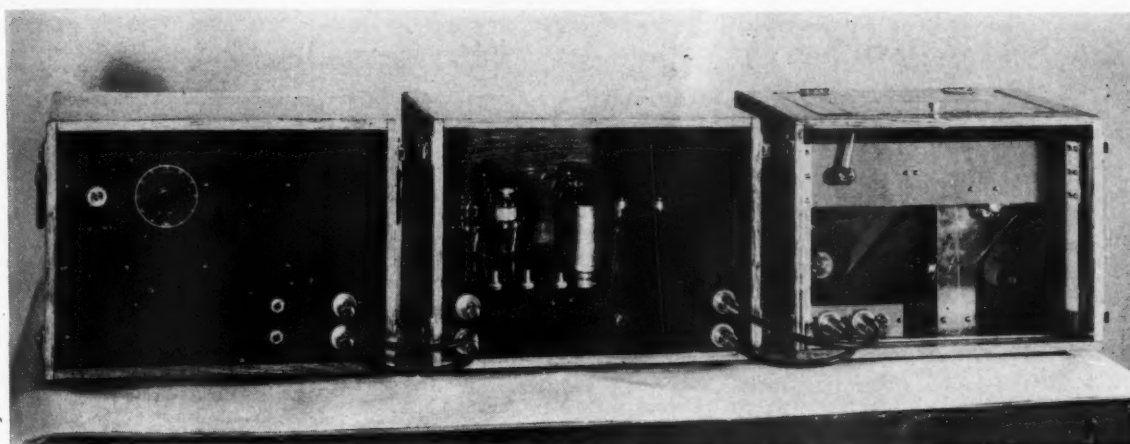
Exact amount of ore which may be reclaimed from Tri-State District pillars and converted into metal in industry's smelters cannot be determined, Dr. Sayer said, but the quantity will be large. The method can be applied to pillar robbing in other mines producing iron, copper, or other ores where open-stope mining methods are employed.

It was emphasized that much of this potential ore could be brought to the smelters within a comparatively short time because it is in developed mines

that already have mining equipment and transportation facilities. Mines that have been closed down and others that are nearing the end of their resources could be made to yield large quantities of ore with very little preparation or new equipment, it was said.

The delicate instruments consist mainly of two sensitive vibration microphones or geophones which are placed in boreholes near the pillar to be removed, the amplifiers and earphones for the observer, and finally a graphic recorder in which sound waves are registered on sensitized paper. All of this precision equipment was developed piece by piece at the Bureau's eastern experiment station in College Park, Md., beginning in 1936, and tested in the Mount Weather, Va., testing audit and in mines in Michigan, Idaho, southeast Missouri, and Ontario.

In deep mines it was found that prior to a "rock-burst" there were subaudible cracking or splitting sounds, and the Bureau engineers believed that if these noises were recorded and counted during an appropriate period they could estimate the pressure on the pillar and determine



This set of equipment comprising three units—power source, amplifier and recorder, are used in connection with the "geophone"

U. S. BUREAU OF MINES

whether or not it would be safe to remove it and depend upon the roof to support itself.

In the practical experiments in the Tri-States District the instruments were found to furnish an effective forecast of the strength of the roof and of the pressure exerted. By counting the number of noises per minute as recorded on sensitized paper and integrating the results for several hours or days, they were able to draw up charts showing the pressure conditions surrounding a pillar. They could

even estimate the intensity of the rock disturbance and the distance from the source to the point of detection. Furthermore, the operation of the Bureau's recorders disclosed that most rock noises are local in nature, usually traveling less than 100 ft. from the pressure area in which they originate.

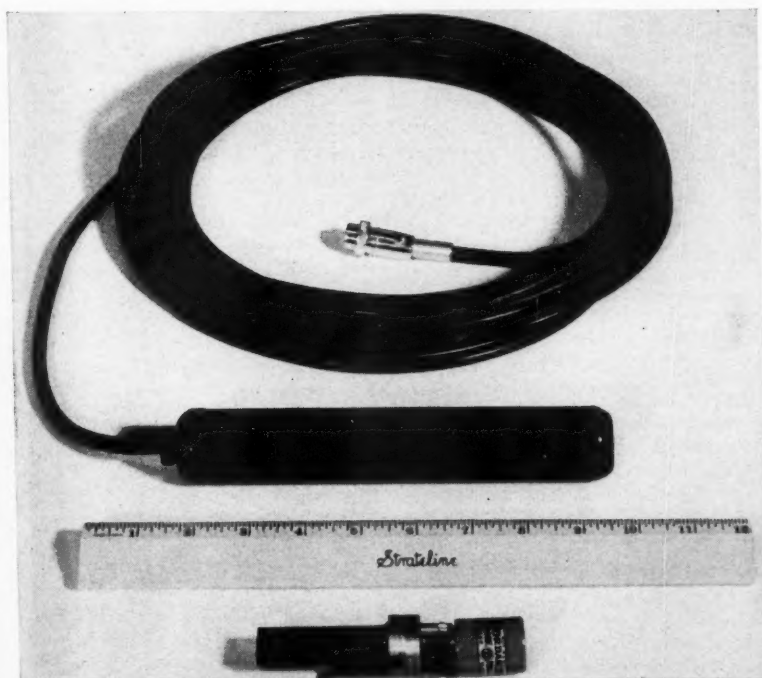
The importance of measuring pressure on pillars in the lead-zinc mines of the Tri-States District is emphasized by the fact that cities, industries, homes, and agricultural lands occupy the surface above the maze of

underground workings comprising the lead-zinc mines. These mines are "shallow," and the problem of avoiding cave-ins and consequent destruction of surface property is paramount.

In this district mines are worked according to the location of the mineralized zones and the advancing operations follow an uneven course as the zones twist and turn and vary in thickness. Some of the rooms or caverns in this field are several hundred feet long and 50 or 60 ft. high, with tall rounded safety pillars supporting the roof. To remove these pillars without accurate knowledge of the strength of the roof and the pressure exerted would invite disaster, not only for the persons working in the mine but for the buildings and lands on the surface.

The Bureau's instruments and procedure for testing rock pressure by listening to the subaudible noises and predicting accurately just how large a span the roof will stand without pillars is resulting in the successful extraction of many pillars without harm to man or property, and at the same time giving the country a large quantity of urgently needed zinc.

Complete information on investigations and experiments in the prediction of rock-bursts as applied to metal mining is included in Report of Investigations 3444, "Measurements of Pressure on Rock Pillars in Underground Mines, Part I," published recently, and in Report of Investigations 3654, "Use of Subaudible Noises for the Prediction of Rock-Bursts, Part II," by Leonard Obert and Wilburn Duvall, soon to be published by the Bureau of Mines, Department of the Interior, Washington, D. C.



The "geophone" designed for insertion in a drill hole. The outside diameter is  $1\frac{1}{8}$  in. Note small pick-up and amplifier

U. S. BUREAU OF MINES



# THE IMPORTANCE OF THE COAL MINER IN THE WAR EFFORT

*As viewed by General Lewis B. Hershey, Director of Selective Service; Donald M. Nelson, Chairman, WPB; and Wilbur A. Nelson, Head of the Mining Branch of WPB.*

**"NO MAN PLAYS** a more important part in our war production program than does the coal miner.

"In order to appreciate the important part that each coal miner plays, it is necessary to understand the tremendous contribution each individual miner makes every day he labors. In a normal day's work a miner can produce approximately 12 tons of coal. Translated into war production, this means that his day's effort will manufacture six tons of steel. It will haul 1,400,000 lbs. of war materials a distance of 216 miles. It will haul more than a million pounds of war materials from our production centers of Detroit to the shipping ports of the eastern seaboard. It will transport 1,000 soldiers a distance of 80 miles. It will manufacture steel for 15 large bombs. It will manufacture enough steel for a six-ton tank or for six 16-in. shells. Nothing less than the maximum effort on the part of America's coal miners will provide the coal America must have to prosecute its total war effort to a victorious end. Any let-down in coal production means a let-down in war production—lengthens the war and delays the day of final victory.

"To the coal miners of America falls the all-important and heavy task of insuring that America has all the coal she needs to win the war of production, the war of transportation, and, finally, the war of military combat in the shortest possible time. They did the job in World War I. They will do the job again."



General L. B. Hershey



Donald M. Nelson

**D**ONALD M. NELSON, chairman of the War Production Board, on July 24 invited hard coal men to participate in the War Production Drive to increase the output of hard coal to meet the nation's war and heating needs. In calling upon miners and operators to increase production through labor-management committees the War Production Board has the cooperation and encouragement of the United Mine Workers of America, Anthracite Industries, Inc., and the Coordinator of Solid Fuels.

In recent years anthracite mines have been producing less than capacity. This is partly because of the growing use of fuel oil for heating and the lack of demand for hard coal.

However, as the submarine campaign diminished the supply of oil to the East Coast, the demands for anthracite rose. By this time, many of the hard coal miners had gone into war industries, and many of them had entered the armed forces.

This loss of manpower has left the industry in a critical condition. Insofar as the anthracite industry is now mechanized, it would take time to train new workers, and new workers are not available. Hence the quickest answer to America's shortage of fuel is an increased production by the men already on the job.

**"YOU MINERS HAVE** everything at stake in this war. Though you work in the mines, far from the battle front, you are soldiers just as much as the men who fly our fighting planes and drive our tanks. In Washington, we are doing everything we can to see that you have the necessary machines and materials. But the job is mainly yours. To do it, you will have to work every regular working day that you possibly can.

"Every time you dig half a ton, you can figure you are making it possible to produce another 2,000-lb. aerial bomb.

"If you stay away from work for three regular working days, it may well cost the fighting forces a light tank, because it takes as much coal as you can dig in that time to make the steel that goes into one of those tanks.

"What happens if you lost six working days over a month's time? As a direct result of your idleness, the country loses enough coal to make the steel for a 27-ton medium tank. Coal is necessary even to produce small weapons, like hand grenades. In an average day's work, every one of you digs enough coal to start 9,600 hand grenades on their way against the Nazis and the Japs. It is easy to see that our job in this war is all-important. Unless it is done swiftly and well, our munitions plants and our fighting forces cannot function."



Wilbur A. Nelson



# LABOR SITUATION AS REPORTED BY THE COAL DIVISION

- *The production of coal is directly dependent on manpower; the operations of mining require trained, experienced men and labor shortages are developing by induction of men into the armed services, transferring to war industries, absenteeism, and "drifting" between mines. The Coal Division of the American Mining Congress, as a part of its study on methods to improve all phases of mining, has conducted a survey of the labor conditions in the various fields and presents the following nation-wide account.*

*(Plant employment figures deleted by censor)*

## PENNSYLVANIA

### BITUMINOUS

W. J. JENS, Vice President  
*Duquesne Light Company*

THERE is a serious labor shortage at the coal mines in Western Pennsylvania. The need for more miners due to increased demands for coal, the loss of men by enlistments or being inducted into the armed forces, and, to some extent, men leaving the mines for other industries has been responsible for the shortage.

An unusual turnover in mine labor has had the effect of reducing production. Miners are shifting from one locality to another to secure work nearer home and a considerable number of work days is lost in each case during the transition period. Changing around will become worse in localities where public transportation facilities are not available as tires on privately owned cars are worn out and cannot be replaced.

Absenteeism and some outlaw strikes have had an adverse effect on coal production. Efforts have been made to reduce this tendency for men to be absent from work without reason. A recent advertising campaign by the Western Pennsylvania Coal Operators Association, publicizing the importance of coal in the war effort, and the request by the Pennsylvania Secretary of Mines for a monthly report of the names of all men who have been absent without cause, we believe will have the effect of reducing the tendency to "lay off."

The approval of a list of critical occupations in the coal industry as eligible for deferments by the Selective Service Board has made it easier to obtain deferments. There still remains the problem of educating the men to realize that their job in the mines is as important as it would be at the front and to have them accept these deferments.

We believe the many factors involved in the present war emergency will tend to make the labor shortage in the mines more acute as time goes on. It remains then to utilize as best we can the labor that will be available and the whole coal industry must realize that the best way to utilize manpower is to increase the hours of work.

\* \* \*

FRANK B. DUNBAR, Manager  
*Mather Collieries*

THE local labor situation in the upper Monongahela district is quite serious and, as near as I can gather from reports, amounts to a 5 percent to 10 percent shortage. Men are volunteering or are taken into the draft for service in the United States Army or Navy; "key" men such as welders, machinists, carpenters, electricians, etc., are going into defense industries where they get time and one-half and double time while we are on 35 hours a week basis. Advertisements from other industries for mechanics, machinists, etc., offering large wages create unrest among the employees and cause a general slow-up in production.

We are handicapped by the restriction on automobile tires. In some cases our men are able to use street cars or buses for transportation, but in many cases must depend on the automobile and it is a

serious matter trying to get recaps or a new tire.

In Pennsylvania, the law prohibits us hiring a man from outside the state who may be qualified but does not have a Pennsylvania miner's certificate. This is also true of the young men who are citizens of Pennsylvania and must work as a helper for two years before they can get a certificate. Very few men of ability are applying for work and the usual type of applicants are "floaters" who will work one or two days and then move on to some other location.

Absenteeism on pay day and after pay day amounts to, in some cases, 15 percent, with an average lay-off without cause of from 4 percent to 10 percent during the month. We must find some way to get these men to realize their services are needed on the job as well as the soldiers are needed at the front. Under our contract with the United Mine Workers we have the right to discharge men who make a practice of laying off, but if we do, they just go to some other mine.

I believe if the Federal Government would designate a proper Army officer or officers in each county to investigate and report on the men who make a habit of laying off, it would have a beneficial effect.

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E. A. SIEMON, Div. Gen. Supt.  
*Hillman Coal & Coke Company*

AT the mines of our own and affiliated companies there were a total of — coal and coke employees on January 1, 1942, and — on June 30, 1942. So far we have not experienced any actual loss of men over the period mentioned above. But the class of miners and day men now being hired are not up to the usual standard.

Below is a summary showing the number of men who have left our mines and the various channels they entered.

Enlisted in the U. S. Services .....	36
Drafted in the U. S. Services .....	237
Account tire rationing...	49
Transferred between our mines .....	77
Leaving for outside mines (other than ours).....	460
Leaving for other industry .....	181
Leaving for other causes (unknown) .....	361
	—
	1,401

The matter of absenteeism is becoming a serious problem, and in spite of the fact the miners are being urged to work steady, many disregard patriotic and all other appeals and absent themselves from work, particularly after the pay day. During the month of June, 1942, there were approximately 3,000-man shift absenteeisms from our mines and coke yards.

\* \* \*

S. M. CASSIDY, General Manager  
*Wierton Coal Company*

**I**N OUR district, which produces metallurgical coal and beehive coke almost exclusively, the labor situation is bad in several respects and we find most companies have about the same problems as ours. We have lost 13 percent of our total number of employees to the armed services but these are mostly young men and there have been few skilled or key men leave. Besides those in the armed services, many have gone to factories and shipyards and it is necessary to hire almost every man who applies for work. Many of these men are "floaters" who go from mine to mine looking for the softest jobs. Turnover is high, averaging in our case about 9 percent per month, quality of applicants is lower and work efficiency suffers.

Absenteeism is bad and has been getting worse. Most old employees work steadily but many of the new ones are satisfied to average three and four days per week, and it is noticeable that the inferior workers and those who lay off the most have been on relief or the WPA in the past. Many men are now "touchy" and will quit their job with little provocation. Wildcat strikes have not occurred here but have been numerous for the district as a whole; many are over some trivial pretext.

In my opinion the only cure under present conditions is to require each man to work eight hours daily for six days per week, for the Government to take positive steps to put an end to strikes and to centralize employment to stop unnecessary job changing.

\* \* \*

E. B. AGEE, General Superintendent  
*The Buckeye Coal Company*

**I**T is my opinion that serious shortages of experienced men are rapidly developing at the coal mines is due to several causes. Drafting is taking some "certified" mine workers; the opening of additional mines is spreading the experienced men out thinner; war production plants, by offering very high wages, are attracting many good men from the mines.

I do not know what can be done except we must endeavor to have mine workers deferred wherever possible and sooner or later it may become necessary for men to be "frozen" at the mines where they are working in order to prevent shifting to other mines and other industries.

I might also add that there is a tendency for many men to lay off more frequently than in the past. These lay-offs are due to the fact that too much discipline can not be enforced when men are needed as badly as at present. Some sort of labor-management proposition will have to be worked out on this matter if we are to get anywhere.

The labor situation may become increasingly more difficult, particularly, at mines like ours, where approximately 50 percent of the men travel to and from their homes in cars. However, the "Share a Car" idea seems to be taking on here, and the cars are now coming to work pretty well filled.

Our company is producing about the same tonnage as a year ago. Perhaps we are having less turnover than some others, although we think it is bad enough here.

\* \* \*

(See also page 56)

## ANTHRACITE

EVAN EVANS, Vice President  
*Lehigh Navigation Coal Company*

**T**HE impact of the war on our own company has not been very noticeable with respect to drawing off any great number of employees. Our normal personnel consists of

about 4,850 men; 246 have gone into the armed services of the United States and a small number into plants engaged in war work.

Our organization has an average age somewhat higher than that of most industries and probably of most anthracite mining companies. Twenty-five percent of our force are less than 35 years of age; another 25 percent between 35 and 40 years, and 50 percent over 45 years. For this reason a vast majority of our employees have not been reached by the Selective Service.

Nor have the high wages earned in the war industries proved an irresistible attraction. The reasons are rather patent. Our miners, as a whole, are more than usually attached to their home towns and, furthermore, the actual coal cutters seem to have convinced themselves that there is only one job to which they are really fitted—the one they have been working at all their lives. They do not seem to contemplate with any longing the close supervision and routine of the average factory.

The company does not suffer from serious absenteeism except on the rather numerous holidays and the daily production has remained fairly steady. Far more important than individual absences are the occasional local strikes which have plagued this part of the anthracite field for a great many years. However, losses in tonnages from this cause are not nearly as serious as they might appear.

These are the conditions up to the present time. There cannot be any definite assurance that the expected great increase in demand for anthracite and the possible wider call for men for service in the armed forces will not change the picture considerably. Should the production requirements call for 270 instead of the approximately 200 days which have been normal annual total of producing time, the occasional strikes and other interruptions could become serious.

There is a considerable backlog of young men in this community still available for employment. This source, of course, will be drawn upon to fill vacancies in the jobs requiring no mining experience, and vacancies in the jobs of coal cutting can be filled, up to a certain point, with more or less inexperienced men provided a sufficient number of experienced men remain on the job to take the main responsibility in each working place.

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## OHIO

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J. W. WOOMER  
*The Ohio Coal Association*

THE Ohio coal producers have looked at the current labor problem from two angles. (1) Is there any available labor to replace losses, and, (2) What are the causes of losses and lost tonnage? The first point was disposed of quickly; first hand reports of mine employment offices showed little labor applying and the United States Employment offices reported no labor available. The second point developed that we were losing ground from the following causes: (1) draft and enlistments, (2) losses to other industries, (3) reduction in productivity of the men on the pay rolls.

To date the Ohio coal industry has contributed 12 percent of their personnel to the armed forces. This has been, in the main, the cream of the crop and we believe that no further inroads can be made without seriously affecting safety and production of coal. As to our losses to other industries, the sooner they are stopped the better off the coal situation will be. Any manpower mobilization program should recognize at once that while mills can train men, mines cannot do it as well or as fast, due to the safety requirements and many underground problems. We consider the possibility of drafting inexperienced men into coal mining as impractical in modern mechanical mining.

Having proof that there is no reserve pool of labor, how can draft boards and other industries continue taking men and still expect the coal industry to hold the weekly tonnage bogey.

Absenteeism, as high as 15 percent on Mondays and after holidays, plus a general let-down in employees' "will to work" due to steady time and outside distractions, is a very serious problem. In spite of United Mine Workers of America official support, in spite of company propaganda, in spite of some degree of Government pressure, this condition persists and is reflected by a noticeable tonnage loss.

Summed up, we believe there are only two solutions. First, coal can only do its part if it is permitted to keep its present men and, secondly, Washington, perhaps by a U. S. Army public relations detail, must invite our men to work steadily and

return to their former productivity and must prove to our people in mining communities that many men are more important in the mines than they would be at the fronts.

\* \* \*

L. J. LORMS, Assistant to President  
*The Lorain Coal & Dock Company*

WE operate mines in both West Virginia and Ohio. The employment situation at both our properties, and in our opinion, in the industry in general, is very acute. We have lost approximately 200 men to the Selective Service and, in addition, many of our employes are going to other industries. As you know, a coal miner is more or less a specialist and when one leaves he cannot be replaced by men engaged in other industries.

It seems to us that if something is not done immediately to get deferment for all coal miners and also freeze them in the coal industry, the reduction in tonnage will be severe. Another great hardship being imposed on the industry is that of absenteeism.

\* \* \*

F. G. SMITH, General Manager  
*The Sunday Creek Coal Company*

THE situation in this district can be summed up very briefly. To date, there is no particular shortage of labor in this district, there being still quite a few unemployed miners. However, indications are that labor shortages will develop before too long a time.

I am not in a position to give definite figures on turnover and tonnage loss, but don't believe that it has become particularly serious up to the present time. There has been a certain amount of tonnage lost due to the absenteeism but not due to turnover or direct loss of personnel up to this point.

\* \* \*

A. J. RUFFINI, Superintendent  
*The Wheeling Township Coal Mining Co.*

THE labor situation in this district is bad; we have approximately — men on our pay roll, and so far this year we have lost approximately 158 men. This includes a large percentage of skilled machine operators and timbermen.

Skilled mine labor in this district is scarce and the only men we are able to hire are "floaters." This is a very unhealthy condition, because men are difficult to handle

when they can immediately get a job at another mine. This labor turnover has materially affected our accidents, because during the first six months of this year we show a 40 percent increase in lost time accidents over the same period last year. It has also affected our efficiency in tons per man-hour and has caused some tonnage loss.

It is my personal opinion that something must be done in order to prevent this situation from getting into a worse condition than it is now.

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## WEST VIRGINIA

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CHAS. W. CONNOR, Superintendent  
of Mines  
*The American Rolling Mill Co.*

INQUIRY in our field reveals that from 10 to 15 percent of men who were employed in the mines a year ago are now with the armed forces. The fact that voluntary enlistments have been exceedingly great in this district has resulted in the scarcity of younger, able-bodied men on whom we could ordinarily have depended for a further labor reserve.

The construction of war plants and the practice of chemical and other industries in stepping up wages beyond the mine workers' scale has further tended to deplete the labor supply at the mines. This is particularly true of men who have mechanical or electrical ability, such as mine electricians, welders, shopmen, motormen, brakemen, etc.

The only source of labor supply now available is from older men, from those having some physical handicap, or from that type generally referred to as "floaters." This latter type keeps changing from place to place continuously, without effecting any actual increase in the labor supply at any one mine.

Absenteeism has been responsible for some loss of tonnage; this seems to be more prevalent at some mines and in some sections of the district than in others. No actual figures as to turnover or loss of tonnage are procurable, but it is very evident to even the casual observer that this field cannot afford to lose any more of its present able-bodied employes. Generally speaking, our draft boards, knowing these conditions, are cooperating to the best of their ability in granting deferments where such are justified.



THOMAS A. STROUP, Assistant to  
Vice President

West Virginia Coal & Coke Corp.

THE manpower situation in our field appears to be in the early stages of a serious stringency. There has as yet been no great shortage of men, but it is difficult to find replacements in the skilled classes, and even in the unskilled labor for work inside the mines. This has already led to some deterioration in efficiency even though the number of men is still ample.

But the handwriting is on the wall, and even with the most favorable treatment by selective service officials, some loss of manpower is seemingly inevitable from enlistments and from men lured by the shipyards and other armament plants. Even a casual study of present employment trends leaves one with the conviction that by late autumn manpower losses will be irreplaceable. Unless the deferment policy of the Selective Service Administration recognizes this situation, the manpower situation will be further aggravated by the drafting of men, and a serious decline in the output of coal will result.

Absenteeism under wartime conditions is a very serious matter; in our district the percentage of men laying off is from 8 percent to 10 percent on Mondays and on Fridays, dropping to 4 percent on Wednesdays and Thursdays. The operators alone are almost without power to deal with this situation, and the mild efforts of the Government and the Union have so far produced no tangible results.

Labor turnover is a very serious problem, and here again the operator is almost powerless. In one group of 2,500 men during May and June, there were over 600 replacements and these men practically all came from other mines. There is no new labor coming into the coal fields, but there is a large and wholly unwarranted movement from one mine to another.

The immediate future of our labor supply is in the hands of draft boards and Government agencies.

(See also page 56)

## KENTUCKY

A. R. MATTHEWS, Superintendent  
Clover Splint Coal Company

AT this time all mines in the district report that production is restricted by the supply of workers available and that this condition is rapidly becoming more severe. The important factors in this situation and their causes are:

(a) Loss of men to the armed forces, (b) migration to other industries, (c) increase in absenteeism, (d) increase in turnover, (e) replacement of skilled men by men with less training.

A spot check made about June 15, covering mines employing 12,000 men, showed that approximately 10 percent of the employees had entered the armed forces of the country. No accurate records on the migration to other industries are available, but a fair estimate would be about 6 percent. The loss in workers has been partially offset by the employment of other available men; however, the men so recruited, considered as a group, are not as desirable as those lost, so that the replacement has resulted in a drop in efficiency. The local office of the United States Employment Service reports that few acceptable miners are registered at this time.

It is probably true that the decrease in efficiency through higher absenteeism and turnover is a more serious detriment to production than the net loss in men. No statistics for the field as a whole are available, but a spot survey indicates that absenteeism has increased about 4 percent since January of this year.

In the absence of any known reserve pool, it seems obvious the labor supply for the mines in this district can only be maintained through conserving the present group of available workers. Disciplinary action is rapidly losing weight and it is probably true that the only effective means available for maintaining the efficiency of the workers are: (a) An educational program on the seriousness of the national emergency, (b) appeals to patriotism.

## VIRGINIA

E. P. HUMPHREY, Vice President  
Stonega Coke and Coal Company

WE have been troubled considerably with absenteeism and with the apparent lack of interest, among a great number of the men, to work steadily.

It is true, the Selective Service Director has granted certain employees, because of their occupation, the opportunity to be deferred under certain conditions, but this is not effective enough. In my opinion, the local Selective Service Board, before sending out any notices, should determine whether or not the man can be classified in one of the critical occupations, and, if

so, they should automatically defer him. It is too late to ask for deferments after the man is notified that he has been called.

It is particularly gratifying to know that the officials of the United Mine Workers are joining with the various operators in appealing to the employees for greater effort in the production program.

## ALABAMA

P. H. HASKELL, JR., Manager  
Alabama By-Products Corporation

THERE is no actual shortage of labor prevailing in the Alabama coal field in so far as our mines are concerned at the present time; however, the number of applicants for employment appear to be becoming progressively fewer. The principal immediate problems in order of their importance are as follows:

**Absenteeism.** The percentage of absenteeism is so great that it is impossible to accurately predict the size of the crews that will report for work. This situation is particularly aggravated immediately following pay days and at such periods runs from 10 to 15 percent.

**Labor Turnover.** The turnover among employees is running currently at the rate of almost 10 percent per month. It is particularly heavy among employees who do not live in company-owned houses.

**Shortage of Transportation.** As a result of the increasing shortage of tires for privately owned cars we have lost a number of capable men who have sought employment closer home. This is a gradual development and cannot be met over night, but steps are being taken in Alabama to provide buses, etc.

**Loss of Men to the Army.** The Draft Boards are on the whole very cooperative in deferring men; however, many good men have volunteered, and others have refused to request deferment. Approximately 10 percent in numbers of our employees are in the armed forces.

**Loss to Other Industries.** This has been particularly noticeable in the mechanical categories. Few miners have sought employment in other than in coal mines.

Some of the above problems are inevitable and cannot be entirely overcome. Absenteeism is the most serious and seems to present the greatest possibility of cooperative effort by joint action of the Federal officials, the United Mine Workers organization and the employers.

MILTON H. FIES, Vice President  
*DeBardeleben Coal Corporation*

AS nearly as I am able to determine, the chief problem affecting the operation of coal mines in Alabama during this war period is presently not so much a shortage of labor as it is absenteeism.

The percentage of the total of our men drafted in 1941 and the first six months of 1942 has been approximately 8 percent. However, 4 percent, one-half the total, were drafted in the first six months of 1942. The number of skilled workers drafted during the first six months of 1942 is in excess of those drafted during the year of 1941; whereas the hand loaders constituted nearly 50 percent of the men drafted in 1941, but this has been reduced in 1942 to 25 percent. The general conclusion is that the number of skilled men who are subject to the draft will probably be increased and therefore the necessity for requests for deferment will be accentuated.

The common basis of complaint, however, throughout this entire section is absenteeism and the indifference on the part of men to work full time, particularly around pay days. Reduced tonnage is not reflected at the particular time such absenteeism occurs but is spread over the entire production period, for the reason that in order to replace the coal loaders who are absent, brattice men, track men, timber men, etc., are put to loading coal. Their own work later has to be caught up, with a general slowing down of all production.

Cure absenteeism in Alabama and the patient will not complain.

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## INDIANA

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A. K. HERT, General Superintendent  
*Snow Hill Coal Corporation*

ALL essential industries are today facing the problem of increased production with unskilled manpower. The mining industry is no exception and the heavy demands which will be placed upon us in the near future will test the mettle of mine management.

When mechanization was introduced in Indiana, some of the larger mines recognized the need of personnel training, and had, over a period of time, developed a small reserve of trained men. This, coupled with the pre-war surplus of skilled mechanics, has to a great extent enabled us to meet the early demand of the wartime program.

Today we are drawing heavily on the vocational schools for men trained in the several branches of mining. The various organizations connected with the coal industry in this field have sponsored an intensive educational program. Many men, trained in these classes, are now rendering valuable services to the industry, and with opportunities for advancement developing frequently because of the draft and labor turnover, more and more men are showing increased interest in this direction.

It is important that individual coal companies encourage employees to subscribe to these classes in order that they may have trained men with which to meet the increased demand upon our industry. Critical days are in front of us. We must face these facts and be prepared to contribute our fair share of manpower to the nation's armed forces.

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## ILLINOIS

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W. J. JENKINS, President  
*Consolidated Coal Company*

SPEAKING for our own company, as yet there has been no reduction in our output incidental to the enlistment or the loss of employees through the Draft Boards and only an extremely few men have left us to accept jobs at munition works or other industries directly related to the war. This is probably due to a greater number of old men in our employ; for example at our southern Illinois mines the average age of the men at Buckhorn is 38½ years and 43½ at Nason.

At our operations where we require a regular force of — men, we have about — men on the pay rolls. There is an excess number of men available for our Central Illinois operations, and we have no decrease in production in our Central Illinois mines. On the other hand, with certain improvements now in progress, and with a rearrangement of our present working force, production within the next 90 days will be 10 percent in excess of that for the same period of 1941.

Improvements and rearrangements at the two southern mines in the next 30 days will develop an increase of approximately 10 percent over the output of any month during the current year.

WM. P. YOUNG, President  
*Bell & Zoller Coal and Mining Company*

UP to the present time the labor situation at our mines, with one exception, has not been seriously affected by the war effort. However, we feel that the contemplated expansion of our armed forces and war industries can create a serious situation for the coal industry unless proper consideration is given to maintaining an adequate supply of essential mine labor.

Due to the fact that a large supply of experienced mine labor has been available in most Illinois fields during the past 10 or 12 years, relatively few boys have been taken into the mines, so today most of our employees are older men with families and not subject to early call for military service. This fact, together with the present plan for deferring employees in critical occupations, should be helpful in maintaining production.

We have experienced some difficulty due to skilled mechanics being drawn to war industries by the high rates of pay and overtime. Any further loss of this class of labor would present a serious problem.

With the increased mine operating time, we have noticed a steady trend to increased absenteeism; this has caused some tonnage loss and presents a difficult problem which may become more acute as the demand for coal increases. Given the necessary transportation and mine supplies, I am sure Illinois mine labor can be depended upon to produce its share of the coal needed to win the war.

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## ROCKY MOUNTAIN

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EUGENE MCAULIFFE, President  
*The Union Pacific Coal Company*

THERE is a very definite shortage of mine labor in the western mining states, and operators are now recruiting help from areas remote from coal mines. This labor, under broad supervision required for mechanical loading, is easily trained and absorbed, such men proving much more stable than the floating element, familiar with coal mining work. Three factors enter into increased demand:

*First*—The large number of men entering the armed forces. In my opinion, the situation is now such as to justify almost general exemption of coal mine workers from draft.

*Second*—Absenteeism has reached

the proportions of a crime; the men ignoring their obligation to their contract and their Government, as well as the employer. In our case 11 percent of the men, after receiving the \$20 vacation payment, left work on the day preceding the agreed vacation commencement; this situation continuing with only slight diminution during the week following the vacation, the local union officials' protests ignored.

*Third*—The demand for coal from the western mines is extremely heavy and increasing and our efforts to recruit unemployed coal miners in other states have been unsuccessful, many of these men preferring to accept unemployment compensation, with state and county relief, rather than move to where work is available. It is interesting to note that the state of Colorado withdrew unemployment compensation to approximately 300 idle Colorado coal miners. The national labor situation is now such that unemployment compensation and indigent relief should be suspended nation-wide and all emergency Government projects such as WPA and NYA should be wound up immediately.

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D. H. PAPE, President  
*Sheridan-Wyoming Coal Company*

APPROXIMATELY 85 percent of our production is directly connected with the war effort and it is estimated that we will be required to produce within the next 12 months, a 50 percent additional tonnage. This will necessitate a two-shift per day basis but unless something can be done to protect our labor requirements for the necessary crews, we will be forced to work on a one-shift basis and will not be able to mine even our normal annual production.

The gravity of the situation is explained in the fact that the company is now short 42 men of the complement to permit a two-shift operation; 23 of these have entered the armed services since January 1, either voluntarily or through the Selective Service, and 19 others have transferred into war industries. The loss of men to other industries has been due largely to the ever-increasing wages paid on the West Coast and in the intermountain country.

The coal industry cannot increase the price of its product because of the "ceiling" regulations of the Office of Price Administration and cannot, therefore, increase wages. In our all-out effort to win the war

a ceiling should be placed on wages and the War Manpower Commission should immediately take steps to freeze the labor essential to produce the coal requirements of the country.

Notwithstanding the recent directions issued to Selective Draft Boards by the War Manpower Commission to protect essential industries, the State Selective Draft Boards have not yet recognized sufficiently the necessity of deferring men in "critical occupations" in and about coal mines in order that the industry may meet the war demand for coal.

The coal industry in the Rocky Mountain area can produce the necessary coal requirements but unless those that have the power do not immediately take steps to protect it from the spiralling of wages in other industries and by freezing its manpower, it will ere long be confronted with "Dunkerque" and "Pearl Harbor" days.

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MORONI HEINER, President  
*Utah Fuel Company*

UTAH is now called upon to more than double its annual coal mine production and much of this increase in demand is brought about because of the large requirements for coke to be used in production of steel manufactured here and in California. Our survey discloses that we now have 2,764 men employed in critical coal mine occupations, and to produce the greater coal demand requires the employment of 5,150 men; an increase of 90 percent.

In addition to coal required for coke making, Utah is called upon to furnish much additional tonnage to many types of essential war industries, as well as for Army posts and Naval depots. Caring for our domestic market, embracing as it does many thousands of war and agricultural workers throughout these Western states, is, we consider, of vital importance to the nation's welfare, and represents large and growing tonnage demands.

Utah's coal mine manpower losses, both to the draft and to war industries, I am sure, compares well with the national experience. Our records indicate we have a net loss of 600 men so far during 1942.

To provide the manpower required to carry out Utah's coal program demand, it is necessary that coal miners in Utah be classified as "Essential War Workers," and that the coal producing areas be declared as Defense Areas, in order that housing priorities can be obtained and so provide dwellings for these additional workers. To this

end the coal industry of Utah has brought the entire situation to the appropriate governmental agencies.

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GEORGE H. RUPP, Manager, Mining Department  
*The Colorado Fuel and Iron Corporation*

LABOR turnover at the coal mines of our company during recent months has varied from 3 percent to 6 percent and for the first half of the year 1942 has amounted to about 25 percent of the number of employees on the pay roll. We need about — men to keep up our coal production requirements, our average employment has been less than —, and of this loss, 196 men have entered the armed forces.

A considerable tonnage reduction is resulting from absenteeism, draft, transferring jobs, etc., and the only way we are attempting to overcome these losses are as follows:

- (1) We are employing older men. The 45-year age limit no longer holds.
- (2) We are requesting draft deferment for miners.
- (3) We are employing and training inexperienced men provided their physical condition is moderately satisfactory.

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## STRIP MINING

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### ILLINOIS

FRANK F. KOLBE, President  
*The United Electric Coal Companies*

OUR company operates strip mines and employs about — men, requiring employees of a very high degree of training and skill in practically all classifications of labor. For that reason most of our men have been with the company for a considerable period of time.

Of the total employees at December 31, 1941, 130 were less than 28 years of age, and of this group 40 were single. Since that date 30 of these men have either enlisted or have been inducted into the service. An additional 150 employees are between 29 and 35 years of age, of which 136 are married. There are 380 employees over 36 years of age, of which 357 are married and most all of these have dependents. Due to the long training required, our most important positions have been



held by men over 28 years of age, and, therefore, the company has been able to meet the situation caused by the induction of the younger employees. Should it become necessary, however, for the Government to draft many of our employees over the age of 28, our situation would become extremely critical.

Each of our operations is highly dependent upon the other, and the loss of skilled labor in any one category would be felt immediately over all of the operations. Being highly mechanized, a strip mine can to some extent be compared to a production line, and all of the activities must be co-ordinated and correlated; any link that is weak in this chain means loss of production and consequent reduction in efficiency over the entire workings. We are training as many of our men as possible to substitute in those jobs requiring the highest degree of skill but because all of our operations require skilled labor it is impossible to proceed very far with this program.

This company has not as yet been seriously affected by absenteeism and transferring of jobs. Most of our employees have been able to get full working time and have earned higher average weekly and annual wages than is true in most industries.

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## ILLINOIS AND NORTH DAKOTA

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T. G. GEROW, Vice President  
*Traux-Traer Coal Company*

**P**UTTING together information which I received from our superintendents in Illinois and North Dakota, I find the mine labor situation briefly as follows:

Our turnover in southern Illinois for the past six months was approximately 8½ percent; this includes about 2½ percent who transferred to other jobs and 6 percent drafted, enlisted or discharged. In central Illinois the turnover has been considerably less—possibly representing about 5 percent and of this number a large percentage was inducted or enlisted in the service. Throughout the North Dakota area, although I haven't the exact percentage, we have found a considerably heavier turnover in the past six months, most of this being due to the draft and about 5 percent of our men moving to war defense industries at higher rates of pay.

Absence from work, generally speaking, throughout the operations

of Illinois and North Dakota has not been much more than usual; this difficulty is not generally encountered around strip mines as the men are unusually steady.

The draft has not been serious as for the most part our employees are married men with families. Probably most of those eligible for draft have already left, unless there is a drastic change in the regulations and reclassification. However, in general, the draft boards seem to be cooperating—chiefly to the extent of deferments of from 30 to 90 days and permanent deferment seems rather difficult to obtain.

I would make the general comment that our employees being taken either by the draft or the defense industries are younger men who are not holding as important positions as some of the older men. The shovel operators are the key men and for the most part are married and with dependents. Men in the truck driving classification, mechanics and welders are the class that have given the most difficulty both in keeping or deferring when they have been drafted.

I feel there is not enough uniform information given to the various draft boards as to the necessity for key men in the mining industry and not enough weight given to the necessity of keeping good mechanics on the job. Our chief fear is, of course, that ever-increasing wages of other defense industries will attract the skilled men from the mines; so far not many have left and our company has been unusually fortunate.

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## KANSAS

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K. A. SPENCER, Vice President  
*The Pittsburg & Midway Coal Mining Co.*

**W**E seem to be unusually fortunate in our district with respect to manpower; our principal Kansas operation is close to numerous war activities but our losses to other industries have been almost negligible. In reviewing this subject, we find that most of our key men have been with us for a considerable period of years, and in view of the very satisfactory working conditions at our mines, and relatively high rates of pay, we do not contemplate any wholesale shift or transfer that will work against our operations.

In recent months, we have had some little difficulty in recruiting common labor for emergency jobs. This, however, has not been serious

and we cannot at the present time register any serious complaint as to lack of adequate and qualified labor to carry on the coal industry in our district. This same general condition also prevails at our southern Illinois mine and the two mines in northern Illinois.

It will be realized, of course, that we are operating strip mines with a minimum of common labor. The large majority of our men are skilled laborers, have held their jobs for a number of years, realize the value of a permanent job, and have not been attracted by the higher wages of the war industries in this district.

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## OHIO

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W. L. BURT, Vice President  
*The Jefferson Company*

**T**HE labor problem in Eastern Ohio strip mines becomes more acute every day. The draft has taken a sizable percentage of our skilled men, as the local boards, in trying to fill their quotas, have had to draw from all possible sources. In addition, many new industries offering high wages are getting under way in this locality, and have taken a dangerously large number of our experienced employees.

Because of the labor shortage in the area generally, we are forced to a policy of take-what-you-can-get. These new men are untrained and, for the most part, inexperienced and unskilled. Combined with those already employed who know they can get a job elsewhere at any time, they are creating a definite trend toward operating inefficiency, higher accident rates, poorer maintenance and less production per man day. All of these conditions, combined with the tremendous demands for coal to carry on the war effort, indicate that our industry is definitely in a "squeeze" between demand for more production and the dwindling supply of labor.

First it should be impressed upon the local draft boards that the situation is definitely serious and that they should be more liberal in their classification of "essential men." Industries other than coal should be told to use better judgment in hiring men away from the production of a material on which most of them depend for the diligent prosecution of their share of the war effort. Why should the strip mine be used as a skilled labor training ground for other defense industries?

(Continued on page 56)

# Special Tax Problems of the Mining Industry

*As presented to a Senate Subcommittee at Hearings  
in Reno, Salt Lake City and Denver,  
July 16-24, 1942*

**M**AY I say at the outset that we deeply appreciate the fine, constructive work which this committee is doing. We are gratified that you have brought a committee of the United States Senate to the heart of the western mining country, where practical mining men may present at first hand the problems encountered in their own day-to-day experience. Those who have been attending these hearings feel that they are one of the most worthwhile movements ever undertaken for the mining industry, and we thank you for the time and effort you are giving to our problems—which are also problems of such grave concern to our country today.

## Manpower Shortage

Before discussing taxation, may I mention another subject of deep concern to the mining industry. As you know, a critical situation is arising today, due to the shortage of manpower to operate our mines and to carry on development work. Confronted by fixed ceiling prices for our products, our mines cannot compete for labor with nearby war factories, nor with war contractors operating on a cost-plus-a-fee basis, who can pay almost any wages necessary to attract our men and then charge these wages into their contract costs. Some relief has been promised insofar as the drafting of key men from mining operations into military service is concerned, but this will not cure the draining of our men into other industries, which is serving to decrease instead of increase production.

The War Manpower Commission and War Production Board have been

advised of this problem, and this committee, with its thorough understanding of the facts, can aid greatly in its solution.

## The Mining Industry and Mine Taxation

The convening of these hearings is recognition of the fact that taxation—involving the power to destroy—can cripple the very industry upon which our whole war program depends. Certainly there is a situation that calls for correction, when we find our government on the one hand trying desperately to stimulate greater production of metals and minerals, and on the other hand enacting tax laws which discourage commitments for mine development and make it difficult or impossible to increase production or open up new properties. Impediments to production of war-needed minerals, through taxes or otherwise, must be removed.

For the record may I say what everyone here well knows that the mining industry is prepared to make any sacrifice necessary to the winning of the war. Mining men are of the stock of the pioneers. They are proud of their independence, and have been in the forefront of every movement to preserve the free institutions of this country. They are keenly alive to the menace that confronts us today and of their personal responsibilities in meeting it. They are devoting their whole energies and resources to the ultimate victory, without which none of us need be concerned about any post-war period.

So today we find our mining companies doubling and trebling production, and exhausting their reserves



By JULIAN D. CONOVER  
Secretary  
American Mining Congress

without regard to what would normally be sound business practice. We find them undertaking new enterprises with little or no hope of profit, or furnishing their services directly to the government to bring out greater production of war materials. We find them providing additional productive capacity far beyond any possible expectation of post-war needs. Many of these new facilities, both as to mine development and as to plant and equipment, will be virtually useless after the emergency is over. Many of them are being provided through borrowed funds; and whether these funds are furnished by the government or by others, *they must be repaid out of the proceeds of mining operations that remain after the payment of taxes.* If taxes take 80 to 90 percent of the earnings, there is mighty little left to repay such obligations.

Mining men recognize the magnitude of the revenue problem. They know that high taxes must be imposed. They expect to pay their full share, but they are concerned that these taxes be imposed fairly, that they

recognize the fundamental difference between mining and ordinary manufacturing or commercial businesses. They ask that normal earnings be not subjected to a confiscatory excess profits tax, leaving them without either ore or cash reserves to continue operations for a long war or for post-war needs. They appreciate the attitude shown in recent remarks of Chairman Doughton of the House Ways and Means Committee, that industry must not be wrecked by an impossible tax load.

Mining men also know by hard experience the speculative hazards in trying to discover and develop new mines. They know the small proportion of mining ventures that ever succeed, and the large number in which the entire investment of capital and toil and sweat is lost forever. They know that venture capital, even today, must at least see the possibility of coming out even if it is to take all the risks of opening up new ore bodies and getting out these metals which our country needs so badly.

The government, it is true, has recognized the need of encouraging production. It has established bonus prices for new production of copper, lead and zinc; it has had hundreds of geologists and engineers combing the mineralized areas for deposits of strategic metals, and has provided financial assistance to the extent of over \$400,000,000 for their production.

But government effort alone cannot do it all, particularly if that same government, through its tax laws, imposes a crushing burden on mineral producers. The enterprise and initia-

tive of private capital and private persons, willing to take a long chance, have always been the primary means by which new mines and new metallurgical processes have been developed. The efforts of such persons are more needed today than ever before. They should be encouraged, not stifled by tax provisions which leave them with the entire loss of their investment if they fail, but offer no hope of adequate return if they succeed.

I shall outline briefly a few major points in the pending tax bill as to which the mining industry is deeply concerned, and as to which we ask your consideration.

#### The Unit-of-Production Credit for Excess Profits Tax

1. The mining industry has consistently endorsed a wartime excess profits tax as applied to true excess profits, but with equal consistency has held that such a tax should not be applied to its normal earnings. It has urged that mines be allowed a credit against excess profits tax *based on the normal profit per unit of production.*

The principle of this is very simple. It recognizes that when a mine increases production in response to the government's urgent request, and thereby speeds up the exhaustion of its reserves, it is not making an excess profit if the profit per unit (that is, the profit per pound of metal or per ton of ore or coal) is no greater than before. It is simply using up its capital assets, and realizing a return this year on material which normally would have been mined in later years.

Consider a mine with a normal yearly production of 10,000 tons of ore, at a normal profit of \$1 per ton, or \$10,000. If because of the government's demand for greater output, the mine steps up its production to 15,000 tons at the same rate of profit—namely \$1 per ton—it would have a profit of \$15,000. The unit-of-production credit would recognize that this is only a normal profit on the units produced, and the \$15,000 would not be subject to excess profits tax. If, however, the profit on the 15,000 tons were to be \$1.50 per ton, or \$22,500, the increased profit of 50 cents per ton, or \$7,500, would be taxed as excess profits. In either case, the full normal tax and surtax would be paid.

This proposal recognizes the fundamental difference between mining and manufacturing. When a manufacturer increases production, he simply purchases more raw materials and fabricates them into finished articles; he still has his capital assets—his plant and machinery—and the increased production makes no difference in his ability to get more raw materials after the war. With a mine, however, we are using up our capital with every ton of mineral that we take out. If we produce more this year, we simply use up that much more of our capital, and shorten the life of our limited reserves. If we make only a normal profit per unit on the additional tons taken out, we are not making an excess profit, and these normal earnings should not be penalized by a 90 percent tax.

This proposal was sponsored last year by Senator Johnson of Colorado, who worked earnestly in the Finance



A giant copper concentrator producing at record capacity



Committee for its adoption. The committee recognized its importance and asked the Treasury to make a careful study of the matter. The Treasury has discussed it with members of our committee, and recently submitted a very fair statement of the problem, which I quote:\*

"Appendix 2. Excess-Profits Relief for Industries with Depletable Resources

#### "1. The Problem

"For industries with depletable resources the increase in profits during the war may in part result from stepped-up production which would exhaust the available reserves earlier than under normal conditions. Thus, for the same aggregate output over a period of years, the total amount of profits taxable as excess profits will be greater if the output is concentrated in a few years, than if it is spread over a longer period, since the aggregate excess profits tax credit for the period depends on the number of years. The bunching of income into a shorter period does not raise the same problem for industries that do not have depletable resources. The increase in their current production need not reduce future production."

As a "solution" to this problem, the Treasury suggested that the "bonus" payments now being made for "over-quota" production of certain minerals be deducted from excess profits net income and be subject only to the normal tax and surtax—in other words, that such bonus payments be exempt from excess profits tax.

The Ways and Means Committee has adopted this suggestion, which is a constructive move. Clearly, bonus payments will not do much towards stimulating production if the government takes them back through an excess profits tax of 90 percent. However, this meets *only a part of the problem*. It does not apply to any metals or minerals except copper, lead and zinc, for which bonus payments have been set up, and it does not apply to many of our copper, lead and zinc mines which stepped up their production very greatly *before 1942* and which are not receiving any appreciable bonus payments. It represents a partial step towards fair treatment, but the general problem, of mines increasing their production and rapidly exhausting their reserves under the excess profits tax, is still to be met.

*We submit that the unit-of-production credit affords an answer to this problem.*

\* (Data on Proposed Revenue Bill of 1942" submitted to the Committee on Ways and Means by the Treasury Department, No. 32 (corrected), June 26, 1942, page 464.)



Considering mine taxation at Salt Lake City. Left to right: Dr. Wilbur A. Nelson, War Production Board; Herbert B. Maw, Governor of Utah; Pat McCarran, Senator from Nevada and Chairman of the Committee; Abe Murdock, Senator from Utah and member of the Committee; Henry B. Fernald, Chairman of AMC Tax Committee; Samuel H. Williston, President, Oregon Mining Association

#### Strategic Metals

2. The position of the strategic metals calls for special tax consideration. Today we are making strenuous efforts to secure domestic production of these metals, which we normally import from foreign countries. Most of the domestic operations are high-cost; they cannot expect to compete after the war is over, and can look forward to only a short and uncertain life.

In 1940, to stimulate production, Congress exempted the mining of tungsten, quicksilver, manganese, platinum, antimony, chromite and tin from the excess profits tax. This encouraged mining men to gamble on the wartime market and to open up mines and build treatment plants, in the hope of at least getting back their investment before the emergency ended. They felt they might succeed provided they were not penalized by a steep excess profits tax.

Last year Congress reversed itself and struck out this exemption. Senator McCarran introduced an amendment to have it restored, and he and his colleagues labored earnestly to that end. They were successful in the Senate, but the fight was finally lost in the conference committee. The amount of tax involved is negligible, and considerations both of good faith and good policy call for restoring the exemption.

Further, it has been demonstrated in these hearings that a definite provi-

sion is needed whereby the *investment cost may be recovered before any federal taxes—either normal or excess profits taxes—are imposed*. This should be applied both to the strategic metals and to any other short-lived mining operations—where because of marginal grade, small tonnage, expiration of bonus payments, or other conditions, they cannot expect to compete after the war.

For any such newly opened mines the credit against excess profits tax (since they have no prior earnings) would be limited to eight percent of the invested capital—an absurdly low rate for such ventures. All earnings in excess of this would be taxed at 90 percent, while the eight percent return itself would be taxed at a rate of 45 percent. Obviously the amount left after taxes in most cases would be totally inadequate to return the investment during the short life—perhaps one, two or three years—of the operation.

Anyone putting his money into such a mine recognizes that he has no profits until he has his capital back. The government should, likewise, recognize this plain fact. Taxes should begin only after the capital has been returned; the investor should be given a run for his money, and the nation should be furnished with the additional metal which can thereby be produced from such mines.

Where the government, through the RFC, puts money into a mining enter-

prise, it insists on safeguards for the repayment of its capital. But where private capital goes in, the tax law may prevent any hope of recovering the investment. This should be corrected, and corrected *now*.

### Special Amortization

3. Closely related to this problem are the provisions for special amortization of wartime plant facilities. Under these a "certificate of necessity" may be granted, whereby the cost of emergency plant facilities, including land, may be charged off over a period of five years, or over the actual emergency period if this proves to be less than five years. This applies to construction and equipment, but there has been some questions whether it covers mine development. An amendment to make *all* acquisition costs, exploration, and development of mines eligible for special amortization is needed.

### Use of Three Out of Four Years for Average Earnings Credit

4. The mining industry has urged that in computing the average 1936-1939 earnings to establish an excess profits credit, a company be permitted to omit the worst years, and to average the remaining three years. In most cases, at least one of these years was a year of deficit or abnormally low earnings, and three out of the four years would more nearly represent a normal earnings basis.

The Treasury this year recommended a provision which would come within  $6\frac{1}{4}$  percent of giving this result, by permitting the year of lowest earnings to be figured at a rate equal to 75 percent of the remaining three-year average. This was first approved by the Ways and Means Committee, but was stricken out at the last moment—possibly due to difficulty in drafting the technical language.

We urge the adoption of this provision or of the simpler three-out-of-four years average.

### General Relief

5. Any arbitrary general formula for heavy wartime taxes is bound to create injustice and unintended curtailment of production in some cases, and this is particularly true in the mining industry.

Specific cases where the law applies more harshly than intended are being brought out in these hearings. For

some of these, specific provision can and should be made—such as the unit-of-production credit, and the recovery of capital before taxes in the case of short-lived operations; but there will be other cases which can best be met by broad relief provisions.

We have urged the need for such provisions, and we understand that a real effort has been made by the Treasury to provide them under the pending bill. Yet a brief inspection of the bill seems to show at least one respect in which meritorious cases would be denied relief, through excluding special conditions affecting the industry since 1939. Some of the principal conditions calling for relief have arisen since 1939; they should be definitely recognized, not excluded.

### Depletion

6. As to one matter of deep concern to mining, namely, the allowance for depletion, we strongly commend the action of the Ways and Means Committee in maintaining the existing provisions. The justification of and necessity for these provisions was thoroughly presented to the committee, and we are informed that the vote upholding them was 21 to 4. We trust that the Senate will likewise recognize the justice and wisdom of these provisions.

We also commend the action of the House in providing percentage depletion for fluorspar at the same rate as for metals, and in providing an automatic annual election as between percentage depletion and unit or cost depletion. This remedies for future years the injustice to mining taxpayers who were deprived of their right to take percentage depletion through lack of adequate notification or through technicalities in the regulations. On the other hand, relief should likewise be provided for the injustice done to such taxpayers in previous years.

Further, we protest against recent rulings of the Bureau of Internal Revenue tending to curtail the deple-

tion allowances intended by Congress through the Bureau's interpretation of the "gross income from the property," on which the percentage allowance is computed. This adversely affects producers of gold and silver by the cyanide process, quicksilver producers, and many others whose ore treatment facilities extend beyond mere crushing and concentration by gravity or flotation methods. A full statement on this subject will appear in the record and we trust that proper corrective measures will be taken.

### Excise Tax on Freight Charges

7. The pending tax bill provides a five percent excise tax on freight rates, which would fall with particular weight on the mining industry. Maximum prices have been established for our products, and it appears that such taxes would not be passed on to the consumer, but would automatically be thrown back on the miner. In fact, the metal miner, under existing ore contracts, would have to pay not only the tax on his own crude ore to the mill, but the further taxes on transporting the resulting concentrates to the smelter, and on transporting the metal to a refinery or to eastern markets. Isolated mines would be penalized because of their location, and the industry, as a whole, would be saddled with a burden which would definitely act to reduce production. We urge that no such tax be imposed on the shipment of our products.

There are numerous other points in the pending tax bill which affect both mining and other classes of taxpayers, which I shall not attempt to discuss.

We are sure that the record of these hearings will be of great value to the finance committee in its work on the 1942 Revenue Act. We offer our fullest cooperation to you and that committee, in working out these problems which mean so much to the mining industry and to our country in its hour of stress.

### New Mill For Callahan Consolidated

Callahan Consolidated Mining Company, Wallace, Idaho, is grading and erecting foundations for a new milling plant which will be put up at the No. 2 Rex tunnel workings, which outlet is being used by the company in its Patuxent and upper Rex mining operations. The mill will be of 125 tons daily capacity and is expected to be in operation by October 1. The milling machinery was purchased from an operation near Corbin, Mont., where it has recently been

used for treating old tailing dumps. It is now being dismantled and loaded for shipment to Wallace.

The Callahan Consolidated has a tunnel opening below the Rex level, through the Red Monarch tunnel at the head of Beaver Creek and connections made with the Patuxent and Rex workings, but haulage of ore or concentrates from this tunnel necessitates truck haul over the Dodson Pass summit. The new mill is being located at the Rex tunnel workings because of the handy rail transportation facilities.



## *New Target for Industry:* More Dollars Per Man Per Month in the **PAY-ROLL WAR SAVINGS PLAN**



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If your firm has already installed the

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1. To secure wider employee participation.
2. To encourage employees to increase the amount of their allotments for Bonds, to an average of at least 10 percent of earnings—because “token” payments will not win this war any more than “token” resistance will keep the enemy from our shores, our homes.

If your firm has not already installed the Pay-Roll War Savings Plan, *now is the time to do so*. For full details, plus samples of result-getting literature and promotional helps, write, wire, or phone: War Savings Staff, Section E, Treasury Department, 709 Twelfth Street NW., Washington, D. C.



## **U. S. War Savings Bonds**

This space is a contribution to America's all-out war program by  
**THE MINING CONGRESS JOURNAL**





# WHEELS of Government

**F**AR too serious is the present war situation to permit an adjournment, even for a month or six weeks, of the national Congress which has now been in session for over two years and a half. Submarine sinkings on our coast now totaling over 400 ships, a tough-looking situation on the Russian front, Japanese activity in the Pacific, the heavy munitions needs of our allies and of our own air, naval and land forces—all are too vital and too pressing to permit of any letup on the part of anyone for many, many months to come.

With the passage of the Revenue Bill of 1942 by the House on July 20, both the House and Senate have entered a period of three-day recesses which will probably extend beyond Labor Day. Meanwhile, the Senate Committee on Finance wrestles with the biggest tax bill in all our history in a speeded effort to accomplish early enactment and thereby to bring the benefit of heavy excise tax revenues to the Treasury at the earliest possible date. In the interim all Congressmen and one-third of the Senators who face contests in the remaining primaries and the fall election are spending all possible time in their home districts and States as there now remain but a scant three months before the fateful third of November.

## Senate Receives Tax Bill

Following nearly five months of battling and drudgery on the part of the hard-worked members of the Committee on Ways and Means, the House passed the epochal Revenue Bill of 1942 on the 20th of July. In the same week the Senate Finance Committee heard Treasury Secretary Morgenthau and his staff reiterate the position which originally taken before the Ways and Means Committee in asking for a bill to produce \$8.7 billion instead of the estimated \$6.25 billion of the present measure. Taxpayers' testimony began on July 27 and is expected to continue for two to three weeks.

Late in the afternoon of July 27 the Finance Committee gave special consideration to the Treasury's recom-

## ● As Viewed by A. W. Dickinson of the American Mining Congress

### —Washington Highlights—

**CONGRESS:** Marks time while Finance Committee works.

**FINANCE COMMITTEE:** Moulds epochal Revenue Bill.

**FREIGHT TAX:** Treasury and OPA against it.

**SILVER COMMITTEE:** Reno, Salt Lake, Denver tax hearings fruitful.

**WAGES YARDSTICK:** Little Steel Labor Board decision no precedent.

**DRAFT DEFERMENT:** Selective Service moves to protect mine employees.

**ODT EASES RULES:** Motor truck orders liberalized.

**SILVER:** Civilian uses decreasing.

**STREAMLINE WPB:** Don Nelson organizes for war load.

mendation that percentage depletion for oil and gas wells and mines be eliminated, and decided to devote one day of the hearings to receiving testimony from these industries. There was some sentiment among members of the committee to drop consideration of the Treasury's proposal forthwith, as the issue had been thoroughly fought out in the House and turned down by the Ways and Means Committee; a small majority, however, felt that the Treasury's charges should be answered in public hearings and hence this will be done.

As passed by the House the bill makes no change in the normal corporation rate of 24 percent but increases the surtax to 21 percent making the total rate 45 percent. The excess profits tax rate now stands at a flat 90 percent with no refund of non-negotiable, non-interest bearing bonds payable after the war. While giving relief to some extent, the relief provisions for mines under the excess profits tax leave much to be desired and a determined effort must be made before the Finance Committee to improve this feature of the law.

The provision permitting an annual election of either percentage or cost basis depletion, placed in the bill through the efforts of Representative Wesley E. Disney of Oklahoma, remains intact. Fluorspar producers are placed on a basis of equality with metal

mines through allowance of depletion on the basis of 15 percent of gross income. Removed from the bill by last minute action by the Ways and Means Committee was the amendment providing that upward adjustment could be made of an abnormally low earnings year in determining the excess profits tax credit under the average earnings method.

The excise tax of 5 percent on freight and express charges remains in the bill despite the protest of OPA Chief Leon Henderson who, in a lengthy appearance, warned the committee that such a tax will disturb the price ceilings which the Price Administration is striving so desperately to maintain. As the bill was sent to the Senate only a slight change was made, setting the tax on coal shipments at a flat rate of 5 cents per long ton from the mines to the consumer.

There is cause for encouragement in the remarks of Secretary Morgenthau before the Finance Committee on July 23 opposing the freight excise tax in the following words:

"One tax that would be imposed by the bill before you directly threatens the stability of prices. This is the tax on freight and express which would add to the cost of producing and supplying practically every commodity and service. In great numbers of cases the added cost would make it

impossible for businesses to continue to operate under the price ceilings which have been imposed and the breaches in the price ceilings which would thereby be caused would threaten the whole price structure."

Striking most severely at the natural resource industries, it is to be hoped that the freight excise tax, thus opposed by the Administration, will be stricken from the Revenue Bill.

#### Western Tax Hearings

Aiding the mining industry in the endeavor to find a solution to its tax problems a Senate Special Silver Subcommittee, under Chairman Pat McCarran of Nevada, conducted a series of hearings in July in Reno, Salt Lake City, and Denver, at which mining men from all over the west gave information for the record which will be made available to the Finance Committee. Both Chairman McCarran and Senator Abe Murdock of Utah, who participated in the hearings as a member of the subcommittee, were so impressed with the need for corrective measures that they arranged to appear before the Senate Finance Committee, to urge adoption of a unit-of-production credit for excess profits tax purposes and a moratorium on federal taxation of new war-developed mines until such mines have recovered their initial capital expenditures. Representatives of the Treasury and of the War Production Board were present at the hearings in the west and gained first-hand knowledge of the problems of mines in the present emergency.

#### Wages versus Prices

Compromise in mid July of the demand by the CIO United Steel Workers for a \$1 per day increase in wages was considered definitely significant. The War Labor Board granted a wage increase of 44 cents a day, together with the now well-known "maintenance of membership" clause, a guaranteed daily minimum wage, and the check-off of dues. The wage increase was tied into the January, 1941 to May, 1942 cost-of-living yardstick, and the War Labor Board immediately asked the Conciliation Service of the Department of Labor to apply this formula, amounting to a 15 percent increase, to some 200 wage cases which were pending review before the War Labor Board. OPA's Leon Henderson immediately phoned the Conciliation Service, sounding the warning that the President would not accept this formula as a national wage policy. He also warned that employers granting voluntary increases under the formula need not expect sympathetic hearing on petitions for price readjustments.

For a few days there was much talk of freezing wages, either by executive order or congressional action, but after a White House conference of representatives of industry and labor the situation calmed down, and with the Congress practically in recess until after Labor Day it appears that the wage and price structure will coast along for the present.

An interesting side-light is the reported charge by John L. Lewis that

CIO President Phillip Murray could have secured the \$1 a day increase if he had not been so anxious to get the check-off of union dues to secure revenue from the steel unions.

#### Manpower—Mines and Smelters

First among a number of occupational bulletins covering key occupations in industries essential to the support of the war, Occupational Bulletin No. 12 became effective July 28 for metallic and non-metallic mining. Furnished by the Selective Service System to local draft boards throughout the country for their guidance in granting deferments from military service, this bulletin, which has been urged by the American Mining Congress for the past two months, lists critical occupations in the mining of iron, copper, lead, zinc, aluminum, mercury, manganese, chromium, molybdenum, tungsten, vanadium and similar ores, and in the dressing of such ores; it also includes removing over-burden, sinking shafts, and other such activities preparatory to metal-mining operations. In addition, the bulletin covers occupations in the mining and processing of rock salt, phosphate rock, sulphur, potash, asbestos, pyrites, graphite, borates and other salines, fluorspar, mica, talc, abrasive sands and similar products; it excludes all mined or quarried non-metallic materials used exclusively in construction.

Some 64 occupations are listed as requiring a reasonable degree of training, qualification, or skill to perform the duties involved, and instructs local draft boards to exercise special care in not drafting men in these classifications unless others of adequate qualifications are available.

A further list of key occupations in the non-ferrous smelting and refining industries, carefully prepared by the American Mining Congress in collaboration with the U. S. Employment Service and U. S. Bureau of Mines, is expected to form the basis for a further deferment order in the near future. Also expected shortly is a more comprehensive tabulation of key occupations in anthracite and bituminous coal mining on which the War Manpower Commission has likewise sought the Mining Congress's assistance.

#### Motor Trucks to Run

In response to numerous conferences with mining industry representatives the Office of Defense Transportation, by amendment and order, has removed the majority of the objection-

*(Continued on page 61)*

The new War Department Building in Washington, headquarters of the Engineering Corps



# PERSONALS



**H. B. McNary**, formerly consulting engineer of the New River Company, Mt. Hope, W. Va., has recently become associated with the Mineral Production Security Division of the U. S. Bureau of Mines.

**Howard L. Smith** has been appointed superintendent at the Castle Dome Mine of the Arizona Lead Company, Yuma, Ariz.

**W. G. McBride**, professor of mining engineering at McGill University, Montreal, Canada, and former president of the Canadian Institute of Mining and Metallurgy, has been awarded the Julian C. Smith memorial medal of the Engineering Institute of Canada.

**A. J. Ruffini** has recently been appointed vice president in charge of operations of the North American Coal Company. For the past several years he has been superintendent of the Wheeling Township Coal Mining Company, in charge of their coal

operations at Adena, Ohio.

**W. G. Rudd**, vice president of the People's Gas, Light and Coke Company, of Chicago, Ill., has accepted appointment as a member of the Solid Fuels Advisory War Council. As a member of the advisory war council, he succeeds **D. M. Rugg**, vice president of the Koppers Company, Brooklyn, N. Y., who resigned in order to devote more of his time to the development of the synthetic rubber industry.

**Wright, Dolbear & Company**, Consulting Mining Engineers and Geologists, recently announced the admission of **Henry Mulryan** as associate member of the firm with offices at No. 417 South Hill Street, Los Angeles, Calif. The New York office of the firm has been removed to No. 11 Broadway. The San Francisco office is continued at No. 206 Sansome Street.

**Eugene D. Gardner**, supervising engineer of the Southwest experiment station of the Bureau of Mines at



Tucson, Ariz., since 1925, has been appointed Regional Engineer in charge of the newly organized Central States office of the Bureau of Mines at Rolla, Mo., established to expedite the exploration and the development of strategic war minerals. Mr. Gardner, who has spent 36 years searching for minerals and studying mining problems in the Western States, will supervise an expanded regional program to develop mineral deposits in the Central States and help meet the country's wartime mineral requirements.

**Robert D. Macdonald** has been named a research engineer on the technical staff of Battelle Memorial Institute, Columbus, Ohio, where he has been assigned to the materials beneficiation division. Mr. Macdonald is a graduate of the Montana School of Mines and the Massachusetts Institute of Technology. Prior to joining the Battelle staff he was associated with the General Engineering Company, Salt Lake City, Utah.

**George B. Blonsky**, formerly with the Christmas Copper Corp., at Christmas, Ariz., is now employed by the Manganese Ore Company, at Las Vegas, Nev.

**G. R. Plumb**, formerly manager of the Brinker-Johnson Company, dredge operators at Fairbanks, Alaska, resigned his position and is now a first lieutenant in the U. S. Army.

**John A. Blumenauer**, formerly employed in the mill of the Golden Queen Mining Company at Mojave, Calif., has resigned his position and has joined the U. S. Army Engineers.

**Duncan L. King** is now employed as mill superintendent with the Gray Eagle Copper Company, Happy Camp, Calif. Mr. King was formerly mill superintendent for the Mountain Copper Co., Ltd., Matheson, Calif.

**Robert L. Coe**, vice president of Chase Brass & Copper Co., Inc., Waterbury, Conn., has been elected president of the Copper & Brass Research Association.

**E. N. Pennebacker**, geologist for the Consolidated Coppermines Corp., Kimberly, Nev., has recently returned to the office of the company after having spent more than six months in Cuba doing geological work for the American Metal Co., Ltd.

The Ohio Carbon Company, Cleveland, Ohio, announces the appointment of **J. Lucas** as the company's representative at Charleston, W. Va.

**Herbert C. Enos** is now in Brazil heading a group of mining engineers who are working out metallurgical problems with a view to stimulating trade in strategic minerals and other natural resources between Brazil and the United States.

**M. D. Hill, Jr.**, has been appointed chief engineer in charge of operations at the Jenny Lind and Pine Tree properties of the Pacific Mining Company, Bear Valley, Mariposa County, Calif.

**C. H. Johnson** is now general superintendent of **H. & H. Mines, Inc.**, at Disston, Oreg.

**G. F. Field**, mining engineer and geologist, is now on the staff of the Metals Reserve Corporation. Mr. Field's broad mining experience includes work in connection with the development of the copper region of Northern Rhodesia, Africa.

**Shelly G. Hughes**, formerly vice president of the Differential Steel Car Company, Findlay, Ohio, has been called to service as a reserve officer in the United States Army and commissioned as major. Mr. Hughes has been actively connected with the manufacture of mining equipment for a number of

years and is widely known throughout the coal and metal fields.

**Lee Long** recently resigned as vice president of the Clinchfield Corporation, Dante, Va. Mr. Long was relieved of his duties at his own request, but he will continue to be affiliated with the company. **R. S. Adams** was recently named general manager of the Clinchfield Coal Corporation.

**John J. Inman** was recently appointed resident manager of the American Zinc Company of Arkansas, in charge of operations at Batesville, Ark., according to an announcement by **Howard I. Young**, president of the American Zinc, Lead & Smelting Co. Mr. Inman will also serve as agent for the Metals Reserve Company in the buying of low grade manganese ores in the Batesville area.



M. G. Ensinger, president of the Union Wire Rope Corporation of Kansas City, spoke over the CBS network July 11 in connection with the awarding of the Navy "E" citation to his firm. Mr. Ensinger spoke on the coast-to-coast "Brush Creek Follies," originated by KMBC of Kansas City. Union Wire Rope



is the first Kansas City firm to win the coveted Navy "E."

P. R. Griffith, formerly manager of Sears Roebuck & Company's Knoxville store, was recently made a vice president of the Southern Coal & Coke Company.

Ralph E. Calhoun, formerly superintendent of the Metaline Mines of the American Zinc, Lead & Smelting Company in Washington, has been transferred to Joplin to become assistant district manager of the company's Tri-State mining operations.

J. H. East, Jr., has been transferred by the U. S. Bureau of Mines from Tucson, Ariz., to Washington, D. C.

Charles Bacon has joined the U. S. Bureau of Mines in Boulder City, Nev., as a junior metallurgist.

Stewart J. Bjorklund is now with the U. S. Bureau of Mines in Juneau, Alaska.

Francis R. Pyne has been appointed to a position in the Copper Branch of the War Production Board, Washington, D. C.

Stephen M. Shelton, Bureau of Mines metallurgist and an authority on the recovery and processing of manganese and other domestic ores, has been appointed Regional Engineer for the Eastern and Southern States under the Bureau's new reorganization program. With headquarters at College Park, Md., Mr. Shelton will be in charge of one of the



three regional offices recently created by direction of the Secretary of Interior. A native of South Carolina, Mr. Shelton has a long list of scientific achievements to his credit, chief of which is the origin and development of the electrolytic manganese process.

Alan M. Bateman, professor of geology at Yale, has been appointed to head the Minerals and Metals Division of the Board of Economic Warfare at Washington.

Robert H. Ramsey, formerly metallurgical engineer for the Pan American Engineering Company, Berkeley, Calif., is now assistant editor of *Engineering and Mining Journal*, New York City.

Guy N. Bjorge, vice president and general manager of the Homestake Mines, recently returned to Washington following a trip to Nicaragua for the U. S. Government.

Harold Kingsmill was recently elected president of the Cerro de Pasco Copper Corporation, succeeding Edward H. Clark, who became chairman of the Board.

Stuart R. Zimmerley, expert in ore-dressing methods for minerals, has been appointed Regional Engineer of the newly-created regional office of the Bureau of Mines at Salt Lake City, Utah, from which he will direct the expanded wartime program of the Bureau for that area to provide greater output of strategic and critical minerals from 10 Western States. He is to direct the exploration of mineral deposits, advise mining men of new processes developed by the Bureau, supervise laboratories and pilot-mill operations and speed the movement of new metallurgical processes from the experimental stage to commercial production.



Glenville A. Collins, consulting engineer, Victoria, B. C., is now in charge of operations at Camp Adair, Corvallis, Ore.

Heath Steele, vice president of the American Metal Company, succeeds H. DeWitt Smith as president of the Mining Club, New York City.

Eugene McAuliffe, president of the American Institute of Mining Engineers was recently elected an honorary member of the Institution of Mining Engineers in England.

Vic Schneider is now a member of the Sales Engineering Staff of Western Machinery Company, San Francisco, manufacturers of Wemco mining and milling machinery. He was formerly with Denver Equipment Company as manager of sales of their western division and prior to that time, he represented them in South Africa. Schneider will make his headquarters in San Francisco and will maintain contact with the mining industry throughout the west.

Dr. Oliver Bowles, geologist, mining engineer and internationally-known authority on non-metallic minerals, has been named chief of the Non-metal Economics Division of the Bureau of Mines. Dr. Bowles, who formerly was assistant chief of the Non-metal Economics Division, has been with the Bureau since 1914. As chief of this division of the Bureau, Dr. Bowles fills a vacancy created by the resignation of Paul M. Tyler, who left the Bureau to join the Board of Economic Warfare.

The John A. Roebling's Sons Company announces the appointment of Homer H. Davis as manager of their Denver Branch. Mr. Davis studied

engineering at the Iowa State College and the Montana State College of Mines. During World War I he was a member of the U. S. Army Air Corps. Before joining the Roebling Organization in 1926 he was a member of the sales force of the Galigher Company, Salt Lake City, Utah. Mr. Davis assumed the managership of the Denver Branch on June 1, having served as salesman for the past 15 years.



Frank M. McKinley is now employed by the Bunker Hill & Sullivan Mining Company, Kellogg, Idaho. He formerly had a position with the Union Iron Works, Spokane, Wash.

C. Carlton Semple, general manager of Cia Minas Matagalpa, Nicaragua, arrived recently in the United States.

R. S. Sanford of the U. S. Bureau of Mines, Tucson, Ariz., has assumed direction of the Bureau's work in Alaska for the summer.

A. W. Tolonen recently joined the staff of the U. S. Bureau of Mines, Little Rock, Ark.

David Keppel, instructor in geology at Wesleyan University, Middletown, Conn., recently joined the Mica and Graphite Branch of the WPB in Washington.

### — Obituary —

William Braden, 71, of Los Angeles and New York, died on July 18 following a heart attack in Reno, Nev. A pioneer in the development of low-cost copper deposits, Mr. Braden was also an expert in the treatment of metals by oil flotation, and in association with Messmore Kendall, mined the great copper deposits of the Braden Copper Co. at Rancagua, Chile, and the Andes Copper Mining Co. at Porterillos, Chile. He directed operations of the Andes Exploration Co. in South America from 1913 to 1918, and in recent years was employed on special mining projects by the Anaconda Copper Mining Co.



For many years the trade-mark of  
Anaconda Copper Mining Company

# "From mine to ~~consumer~~"...

## the tide of metals flows faster

EVERY HOUR of the day, Anaconda Copper Mining Company and its associated companies are stepping up production of copper, lead, zinc and manganese. Not of copper tube or brass pipe for plumbing . . . not of sheet copper for gutters and flashing . . . not of bronze for hardware and screens—but metals in an ever mounting tide to meet our country's war needs.

Today, the entire Anaconda organization is geared to this objective. More copper for projectile bands, more brass for cartridge cases and time fuses, more bronze

for the essential parts of guns and other military equipment, more copper wire and cable for ships, planes, tanks—and to electrify the plants that produce them.

Anaconda's vast mining properties in two continents, with tremendous ore deposits, smelters and refineries, are being worked 7 days a week.

*During the six months ending March 31, 1942, the Anaconda companies produced from their own mines nearly 100 million pounds more copper than during the corresponding period of the previous year . . . over 11 million more pounds of zinc . . . over 60*

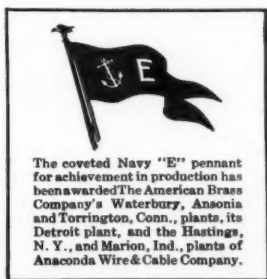
*million more pounds of manganese.*

The American Brass Company, largest fabricator in the copper and brass field, has seven plants working to meet the needs of the Army and Navy.

All eight plants of Anaconda Wire & Cable Company are producing vital copper wire and cable in ever increasing quantities for war use.

All told, 63,251\* members of the Anaconda organization are working at mine and furnace, press and bench, laboratory and desk . . . as the tide of metals flows faster and faster for victory.

\*Every department of the Anaconda organization in the U. S. is participating in the voluntary pay-roll deduction plan for the purchase of U. S. War Bonds.



# *Anaconda Copper Mining Company*

ANDES COPPER MINING COMPANY  
CHILE EXPLORATION COMPANY

GREENE CANANEA COPPER COMPANY  
INTERNATIONAL SMELTING & REFINING COMPANY

The American Brass Company • Anaconda Wire & Cable Company • Anaconda American Brass Company Ltd., of Canada

# MINE LABOR SURVEY

(Continued from page 45)

(Editor's Note: The following two statements were received too late for inclusion with the other reports from Pennsylvania and West Virginia on pages 40 and 42.)

## PENNSYLVANIA

GEORGE L. SMITH, Vice President  
Rochester & Pittsburgh Coal Co.

IN the last six months, our labor force has shown a steady decline. For example, during the month of June we lost 46 more men than we were able to hire and had a consequent loss of tonnage. To bring our force to the desired strength by the end of this year will require more than 900 additional men. This additional labor is not available in this field, even though we have raised our age limit and lowered our physical qualification standards. While it is true that there may be an excessive labor supply in nearby fields, it is difficult for us to use any of these men due to the questions of housing and transportation.

Houses are scarce in our area and even in our mining towns, there is a waiting list for every vacancy that occurs. Private facilities within a reasonable distance of our mines are not practical due to the tire situation throughout the nation and quite often it is not feasible for men to furnish their own transportation.

In an effort to meet these two problems of housing and transportation, we are cooperating to the fullest possible extent with private industries who are now operating vehicles servicing our mines and in connection with this, we find that those employees who have any kind of a car at all prefer to ride their own and do so as long as possible. They are extremely reluctant to make the shift from private automobiles to bus service and even with this, we have helped ourselves to some extent when some of our employees living in the same locality have been grouped by us on the same shift.

Our absenteeism percentage is running extremely high and is effecting a serious loss of tonnage. We have been trying to improve absenteeism by the use of posters and have even gone to the extent of contacting some of our own employees who are located in the training camps, to write back to the local unions and try to impress on

them the need of everybody working every day to "keep them flying."

Labor turnover has been a particularly difficult problem due to the high wages being paid in other industries. In the month of June, 1942, we lost almost 4 percent of our total payroll to other industries and even had some proselyting by our neighboring coal companies. This 4 percent figure, of course, is not to be considered as a loss of 4 percent of our local force, in that we have reduced this by hiring men to replace some of these workmen.

From the beginning of the operation of the Selective Service Act of 1940, we have lost just about 10 percent of our total working force. The men thus lost to the armed services were in excellent physical condition and of the younger age brackets and we have found it utterly impossible to find adequate replacements for men of this type. This has resulted in the hiring of older men which is effecting some decrease in efficiency.

Another important point in regard to labor in general, is that our miners are beginning to get very touchy about the money they are making and are causing us considerable labor trouble.

## WEST VIRGINIA

S. C. HIGGINS, Secretary  
New River Coal Operators Association

THERE are three important factors necessary to maintain a continuous flow of coal to war defense plants, which are as follows: man-power; transportation; necessary materials and supplies to maintain repairs and replacing machinery damaged or worn out under the strain of heavy production.

At the present time, shortage of labor due to the operation of the Selective Service Act and the voluntary transfer of employees to other war defense industry, accounts for an approximate 10 percent loss in tonnage weekly. In addition, voluntary absenteeism of the workers is now accounting for another 10 percent loss in production weekly.

To meet the loss of men to the armed forces, the mining industry has requested the Selective Service officials, both Federal and state, to defer such men as are essential to the war effort in the production of coal and it is expected that through the Federal Man-Power Commission, when that machinery starts functioning, the voluntary transfer of men to other war industry will be controlled, or at least greatly corrected.

As to absenteeism—educational effort of management, with valuable assistance from the ranking officials of the United Mine Workers of America, with appeals from a patriotic and duty standpoint, plus radio and newspaper publicity, are showing definite results.

About 40 percent of our employees in the mines travel great distances to reach their work, the average being about 26 miles. The tire shortage is now becoming acute and showing its effect and while efforts have been made to conserve transportation by men doubling up and also using buses, to the limited extent that is possible, serious consideration must be given by the administration officials in Washington to increasing the quota of new tires, retreads and recaps for essential mine workers. The mining industry must be given equal consideration with other plants engaged in essential war activity, if we are to maintain a normal production of coal.

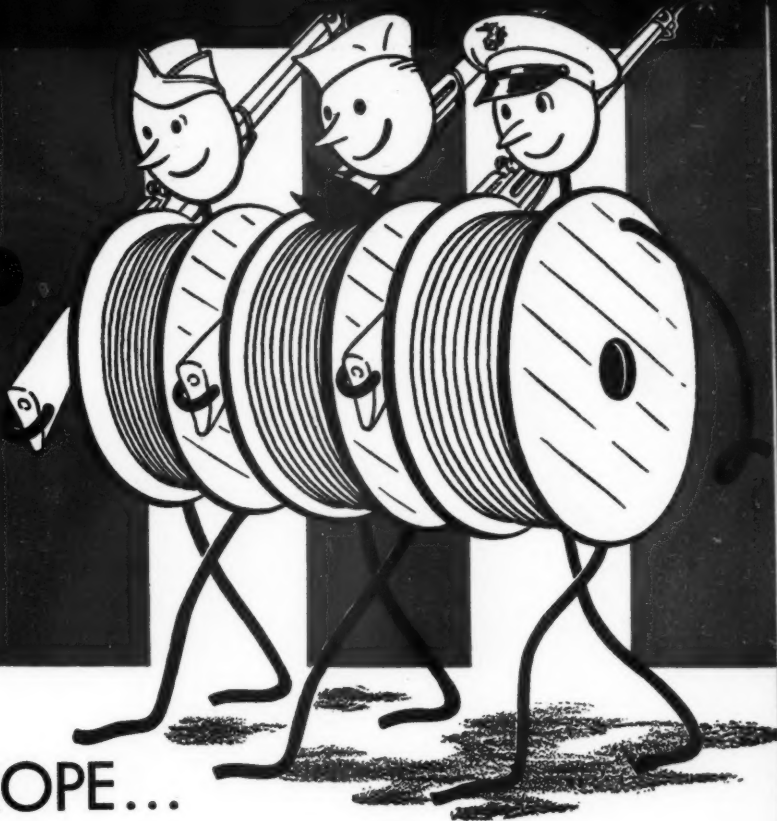
## Illinois Mineral Industries Conference Cancelled

Cancellation of the Illinois Mineral Industries Conference, which was scheduled for Urbana, October 30 and 31, under the joint sponsorship of the Illinois Mineral Industries Committee, the Engineering Experiment Station of the University of Illinois, and the State Geological Survey, has been announced by Dr. M. M. Leighton, chief of the Illinois State Geological Survey.

The sponsors have agreed to lend their combined support to the regional conference of the American Institute of Mining and Metallurgical Engineers, to be held in St. Louis on October 1 and 2. According to Dr. Leighton, a member of the general committee for the regional conference, the St. Louis meeting of the A. I. M. E. will stress current conditions and problems of the mineral industries of the entire Mississippi Valley area, with particular to the war needs, and the purpose of the Illinois conference as originally planned will be adequately met. It was felt that the war situation and the need for coordination of all industrial and research efforts made it desirable to concentrate time and effort on the one meeting.



# BACK THEM UP NOW!



## Conserve WIRE ROPE... Make It Serve You Better

The Navy, the Army and the Marines are doing their part to win this war quickly . . . but our fighting forces must have war materials, more of them—faster! It is up to everyone to practice rigid Economy with all critical materials . . . to save what we have and use what we have to better advantage. For this purpose, the following litera-

ture should be helpful to your organization in proper selection, handling and use of WIRE ROPE. This information will help SAVE Wire Rope, which is made of high-carbon steels by highly trained men, essential to many wartime industries.

### "ROPE DOPE"

Educational bulletins explaining Wire Rope selection, care and installation.

### "CORRECT HANDLING OF WIRE ROPE"

This booklet shows the proper way to unreel and handle Wire Rope.

### "SOCKETING WIRE ROPE"

The proper methods of socketing are explained and illustrated in this booklet.

### "SPlicing WIRE ROPE"

This booklet gives information on the proper method of splicing.

CHECK ON REVERSE SIDE OF CARD  
THE INFORMATION YOU NEED . . .

Mail This  
Card NOW  
for Valuable  
Booklets

Postage  
Will be Paid  
by  
Addressee

No  
Postage Stamp  
Necessary  
If Mailed in the  
United States

**BUSINESS REPLY CARD**

FIRST CLASS PERMIT NO. 3247 (SEC. 510, P.L.&R.), KANSAS CITY, MO.

**UNION WIRE ROPE CORPORATION**

21ST AND MANCHESTER AVENUE

DEPT. M

KANSAS CITY, MISSOURI



One of the three Union Wire Rope shifts working for Victory.

## THE NAVY "E" for EXCELLENCE

The Union Wire Rope Corporation takes pride in announcing that it is now privileged to fly the Navy Department blue burgee, for outstanding performance in the production of naval material. To each member of Union Wire's personnel is awarded the official insignia, and the legend, "For Production."

### LET'S ALL PULL TOGETHER FOR VICTORY

The War Production Board realizes the vital necessity of Wire Rope in the production of many products so essential to Victory, and is cooperating in every way possible with the Wire Rope industry. If you order more Wire Rope than you need for current use, you are defeating a good cause, but it is wise to give advance notice on requirements.

In ordering Wire Rope, give the manufacturer as detailed information as possible on the planned use of the rope. If the exact specifications are not available, the manu-

facturer, with your information, can make recommendations for the next best specification. You will be doing your part, patriotically, by seeing that every foot of rope is used to the best advantage.

It is necessary for the Wire Rope industry to maintain records showing the rank of priorities applying to its products, and it is required that you furnish the distributors or manufacturers of Wire Rope with proper priority ratings with your orders.

We maintain the following Mill Depots, with Rope Engineers available when you need them.



### UNION-FORMED Wire Rope SAVES STEEL

### UNION WIRE ROPE CORPORATION

General Offices and Factory  
2100 Manchester Ave.  
Kansas City, Mo.

#### UNION WIRE ROPE CORPORATION

21st & Manchester Avenue  
Kansas City, Missouri

Gentlemen:

Please send to us, without obligation on our part, the following:

- |  |   |
|--|---|
| <input type="checkbox"/> "Rope Dope"                     | <input type="checkbox"/> "Socketing of Wire Rope" |
| <input type="checkbox"/> "Correct Handling of Wire Rope" | <input type="checkbox"/> "Splicing of Wire Rope"  |

SIGNATURE.....

TITLE

FIRM.....

ADDRESS.....

#### MILL DEPOTS

ASHLAND, KENTUCKY  
CHICAGO, ILLINOIS  
HOUSTON, TEXAS  
MONAHANS, TEXAS  
NEW ORLEANS, LOUISIANA  
PORTLAND, OREGON  
SALT LAKE CITY, UTAH  
TULSA, OKLAHOMA  
ATLANTA, GEORGIA





# NEWS and VIEWS

## Denny Named Chief of Coal Mine Inspection Division

Edward H. Denny, mining engineer, veteran of more than 35 years in coal and metal mines of the United States and a member of the Bureau of Mines Safety Division staff since 1912, has been named chief of the Coal Mine Inspection Division of the Bureau, Dr. R. R. Sayers, director, has announced. Mr. Denny succeeds John J. Forbes, who now heads the Bureau's recently created Mineral Production Security Division and will also assist in the administration of the Coal Mine Inspection and Safety Divisions.

As chief of the Coal Mine Inspection Division, Mr. Denny will maintain headquarters at Pittsburgh, Pa., and will direct the field activities of the 107 Federal coal mine inspectors and the corps of special engineers who are investigating health and safety conditions and practices in the coal mines of the United States. Mr. Denny, whose work with the Bureau has taken him into mines in virtually all the coal producing areas of the nation, joined the Bureau in 1912. He has recently headed the new Rocky Mountain-Pacific Coast office of the Safety Division at Salt Lake City, Utah, as senior mining engineer in coal and metal mining and in petroleum, and previously directed the Safety Division's program in these same branches of the industry in Colorado, Wyoming, New Mexico and parts of South Dakota and Texas, as district engineer for the Bureau's field headquarters at Denver.

In promoting safety in mining, Mr. Denny has collaborated with Dan Harrington, Chief of the Bureau's Health and Safety Branch and with other mining authorities in the preparation of Bureau publications for miners and mine operators. He is also the author of many publications which reflect the wide range of studies he has conducted in coal and metal mines and also in petroleum fields during more than three decades.

## Coeur d'Alene Mines Extending Main Shaft

Coeur d'Alene Mines Corporation, Wallace, Idaho, is engaged in sinking its main shaft from the 1,800 to the 2,000 level. It is planned to cut a station at the 2,000 level and continue sinking on to the 2,200 level before cross cuts are driven to the vein, according to Robert Bailey, chief engineer for the company. It is reported that drifting on the 1,800 level has shown the same grade ore body as developed in the levels above.

## FIELD ENGINEERS COMPLETE TRAINING



Sixty-three mining engineers of the Bureau's new Mineral Production Security Division, shown above with Bureau officials, completed an intensive three weeks' training at Pittsburgh, Pa., on August 7 and have gone out to their posts in various mining fields throughout the country. Thirteen additional engineers are to be added, bringing the total force to 76

## Shattuck Denn Acquires Arizona Zinc-Lead Mine

The Shattuck-Denn Mining Corporation, operator of the Denn copper mine located in the Warren mining district of Southern Arizona, has acquired control of the Iron King Mining Co., which operates a mine at Humbolt, Yavapai County, Ariz. The Iron King mine, located in the Big Bug district, produces principally zinc and lead concentrates from a 225-ton mill. H. F. Mills, general manager of the Iron King Mining Company, will continue in charge.

## Continue Building Heavy Trucks

Although production of heavy duty trucks was stopped effective May 31 by order of the War Production Board, Amendment No. 1 to the order recently approved will permit of the manufacture of not more than 500 of the giant "off the highway" trucks for use by mining and other essential industries and for export. These 500 trucks may be manufactured in the period ending December 31, 1942, for essential civilian and indirect military requirements, with quantities which any firm may manufacture within the allotment to be authorized by the Director General for Operations. PRP certificates will be granted to cover the materials of

manufacture for the trucks when specific authorization has been issued to particular producers for the manufacture of a given number of units. WPB's announcement specifically recognizes the necessity of these trucks, which range from 45,000 to more than 100,000 pounds in gross weight, for ore and coal strip mining projects.

## "End Use" Symbols Deferred

War Production Board agencies have extended to August 31 the time within which notification must be given as to the Allocation Classification Symbols and Purchaser's Symbols applying to specific purchase orders or contracts. Such symbols, designed to trace the "end use" of products sold, are required as to all purchase orders (other than retail) placed after June 30, and as to all orders, whenever placed, calling for delivery after July 31.

The deferment authorization, contained in Amendment No. 2 to Priorities Regulation No. 10 under date of July 22, was made necessary by the confusion and complications which have arisen in connection with the system prescribed in Bulletin No. 10. On August 11 and 12 a large meeting was held in New York between industrial representatives and WPB staff men to discuss procedure by which the objectives of Regulation No. 10 can be achieved.



## By Coal Men

### Wage-Hour Status of Mine Lessees ("Leasers")

The division holds that there can

## A political cartoon by J. J. O'Rourke. In the foreground, a woman wearing a bunny-ear hat and a man in a suit with 'CONGRESS' on the back are running away from the viewer. The woman carries a sign that says 'FALL ELECTIONS'. Behind them, a large crowd of people is packed into several vintage cars. One car has a sign that reads 'RUSH U.S. WAR REPORTS', and another has 'MUST LEGISLATION'. Musical notes are floating in the air, suggesting a chaotic or celebratory scene. In the bottom right corner, there is a fire hydrant and a small signature 'J. J. O'Rourke' with a star.

- - THE CHARLESTON DAILY MAIL

The division will not recognize any mining lease for a period of less than six months as a bona fide and independent lease and will also question the independence of a lessee under a lease which gives the lessor a discretionary right to cancel the lease prior to the end of the stipulated period.

K. W. Browning, of Salt Lake City, assistant district representative of the T. W. I., assisted by Dr. Roy Hinderman, of the Denver office, will

Participating in the program are the leading producing companies in the Carbon County area.

**Oliver Building      Pittsburgh, Pa.**

**Oliver Building      Pittsburgh, Pa.**

## Draft Deferment of Coal Mine Workers

The War Manpower Commission and the U. S. Employment Service are expected in the near future to make public an expanded list of critical occupations in anthracite and bituminous coal mining in connection with the Commission's work on manpower in the published list of "essential industries." A complete tabulation of the critical occupations in each of these essential industries is being made by the Commission for use in the war emergency. Called upon by the Employment Service the American Mining Congress staff has compiled information from major anthracite and bituminous coal mining operations throughout the country and the list which will be forthcoming from the Commission is expected to cover in a more comprehensive manner than heretofore the men in critical occupations in both open cut and underground mining as well as in preparation of the various types of coal.

## Bureau to Establish New Zinc Pilot Plant and Laboratory

Paving the way for development of large, untouched reserves of domestic zinc ores for use in the nation's war machine, the Bureau of Mines will establish a \$350,000 pilot plant and laboratory as a part of the war program of the Department of the Interior to conduct commercial scale tests of a gas reduction process developed by the Bureau for production of the critical metal zinc, Secretary of the Interior Harold L. Ickes said recently.

Based on experiments dating back more than a decade, the Bureau's process successfully has passed tests conducted on a laboratory-size furnace and has been found superior in several instances to commonly-used commercial methods which require large amounts of electrical energy or coke and coal, Dr. R. R. Sayers, director of the Bureau of Mines informed Secretary Ickes.

The pilot plant probably will be built somewhere in the south-central section of the United States. Funds for construction of the research plant have been provided in the First Supplemental National Defense Appropriation Act, 1943, approved by Congress and just signed by the President.

## Slogans Pace War Production Drive

The zest with which American workmen have tackled the job of out-producing the Axis is illustrated by the slogans they write to speed the job along. Most of the slogans stress the importance of speed, the dangers of absenteeism, the perils of inefficiency and the need of working hard, buying bonds and keeping a silent tongue.

Labor-management committees throughout industry have been en-

couraged by War Production Drive Headquarters to conduct slogan contests, and prize winning slogans, selected as the best by committees of plant workers and not by government agencies, are usually forwarded to the War Production Drive Headquarters. The following slogans are but a few of hundreds submitted, but they show the feeling of American workmen, which is an all-important factor in production programs today.

"He Who Naps Helps the Japs."—Westinghouse Electric & Mfg. Co., Nuttall Works, Pittsburgh, Pa.

"Let's ZINC the Hell Out of Them."—American Steel & Wire Div., Donora Zinc Works, Donora, Pa.

"A Plane Every 8 Minutes in 1942."—Goodyear Tire & Rubber Co., Akron, Ohio.

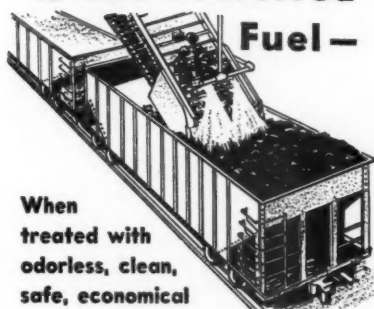
"Your Boner Can Cost a Bomber."—U. S. Rubber Co., Los Angeles, Calif.

"Pass the Schedule, Not the Buck."—Combustion Engineering Co., Inc., Chattanooga, Tenn.

"Dam the Bottlenecks—Let's Fill the Bomb Racks."—E. I. du Pont de Nemours & Co., Morgantown, W. Va.

## DUSTLESS COAL

is the Preferred  
Fuel—



When  
treated with  
odorless, clean,  
safe, economical

## Coaladd

The Scientific Dustless Treatment.

## BUILD FUTURE BUSINESS

Liquid fuel users are turning back to coal. The coal industry now has the opportunity to prove that in war or peace it can heat American homes adequately, comfortably and economically.

Coal has always been the economical and dependable fuel, but dust and dirt drove people to other fields. When these new users learn that it can also be perfectly clean and dustless they will undoubtedly continue to use coal after the emergency. That means future business.

By using "Coaladd" on all your domestic coal you are assured that it will be clean, dustless, odorless and give permanent consumer satisfaction at a very reasonable cost.

*Don't confuse "Coaladd" with ordinary chemical treatment! It is different! It wraps coal in a film! It is harmless to metals and rubber belting. It answers every requirement of the producer, retailer and user.*

*A Product of*

## THE JOHNSON-MARCH CORPORATION

52 Vanderbilt Avenue

New York, N. Y.

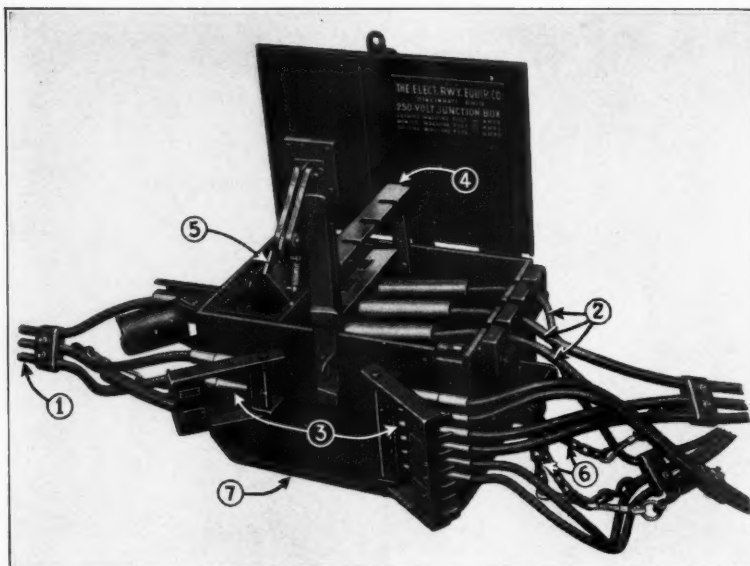
## Scrap Metal Advertising Campaign Under Way

A nationwide advertising campaign, designed to help speed the flow of scrap metal into war production, swung into action on July 20, with newspaper advertisements in every state.

Final details of the program were approved by Lessing J. Rosenwald, chief of WPB's Conservation Division, following conferences with members of the American Industry Salvage Committee, sponsors of the \$2,000,000 campaign. The committee, made up of representatives of American industry, has raised the fund to finance

the campaign and is responsible for the selection of the advertising and publicity mediums used.

"This campaign," said Mr. Rosenwald, "was undertaken by a group of the nation's leading industries, at the request of the Conservation Division of the War Production Board, and is closely integrated with the War Production Board's new National Salvage Program. The committee includes member companies of the American Iron and Steel Institute, which is concerned with assuring a continual flow of scrap metal into its plants, but is also using its advertising to stimulate the flow of other needed material."



PAT. APPLIED FOR

The ELRECO No. 1228 JUNCTION BOX for D.C. circuits is the essential safety link between the power source and the coal mining equipment.

### 7 Features Guarantee Safe and Efficient Service

- No. 1. 3-Wire incoming power circuit cables (Pos., Neg. & Safety Ground). Safety chain and clamp relieves all strain on cable terminals.
- No. 2. Out-going positive cables for machine, loader and drill circuits, equipped with removable socket connectors having insulated handles.
- No. 3. Pin and socket type connectors for all negative and safety ground cables; mounted on the outside of box to secure complete separation from positive circuits.
- No. 4. Safety lever which must be lowered before main switch can be closed. This lever automatically locks all terminal connections in position and prevents any circuit being opened under load.
- No. 5. Quick Break Switch operated by the opening or closing of hinged junction box lid.
- No. 6. Detachable strain chains and clamps for each individual circuit and which prevents any strain on cable connector terminals.
- No. 7. Bottom skids to facilitate moving of box to different locations.

Standard equipment includes 200, 100 and 35 ampere 250-volt enclosed fuses—solder type terminal connections eliminate necessity of all vulcanizing or splicing of cables, and 28" height of box permits use in low coal seams.

**The Electric Railway Equipment Co.**  
2900-18 Cormany Ave. Cincinnati, Ohio

## Silver Industry Committee Holds Meeting

On July 14 a meeting was held of the newly organized Silver Producers Industry Advisory Committee and the Silver Distributors Industry Advisory Committee in the offices of the War Production Board in Washington. Richard J. Lund, who has charge of silver under the Minerals Branch organization in the WPB, presided at the meeting, as the result of which all imports of silver were placed under the restrictive provisions of Order M-63 effective July 21. The domestic and world need of silver, particularly for industrial consumptive use, is constantly becoming more acute.

The Silver Producers Industry Advisory Committee are: E. S. Colcord, Vice Pres., U. S. Smelting, Refining & Mining Company; R. E. Dwyer, Exec. Vice Pres., Anaconda Copper Mining Company; Stanley A. Easton, Pres., Bunker Hill & Sullivan Mining & Conc. Company; J. C. Emison, Vice Pres., American Smelting & Refining Company; Cecil Fitch, Pres., Chief Consolidated Mining Company; O. N. Friendly, Park Utah Consolidated Mines Company; R. M. Hardy, Pres., Sunshine Mining Company; R. J. Ireland, Jr., Pres., Lamartine Mines, Inc.; E. M. Moores, Pres., Gladiator Mining Company; C. H. Nonamaker, Tonopah Mining Co. of Nevada; Hans A. Vogelstein, Asst. Secy., American Metals Company; Edmond M. Wise, International Nickel Company.

On the Silver Distributors Industry Advisory Committee are: Charles Engelhard, Pres., Irving Smelting & Refining Works; Mark S. Goldsmith, Pres., Goldsmith Bros. Smelting & Refining Company; S. H. Haedland, Wildberg Bros. Smelting & Refining Company, and Judson C. Travis, Asst. to Pres., Handy & Harman.

## Honoring Koppers Men in Service

Weekly tribute to miners of the Koppers Coal Division of Eastern Gas and Fuel Associates who have dropped their mining tools to take up arms for the United Nations was started recently at all mines and in all stores of the organization in West Virginia, Pennsylvania and Kentucky.

Each Monday a new red, white and blue bordered poster will be displayed with eight additional pictures of Koppers men and women who have gone to the colors. So great is the number of those who are donning uniform that the series will be continued for a year, or longer, until all have been shown.

Nearest of kin of each person will receive a framed photograph of the soldier, sailor or marine, with a letter from L. C. Campbell, general manager of mines for Koppers Coal.

Gold star men will be honored with special posters carrying individual likenesses enlarged to fill the poster.



## Wheels of Government

(Continued from page 52)

able features of ODT Orders Nos. 4, 5 and 6.

Effective July 13, the provision of Orders 3, 4 and 5 requiring a 75 percent load on motor truck return trips was revoked. Effective July 23, by Order No. 17, trucks engaged exclusively in the transportation of repair or service men and their supplies or equipment were made exempt from the requirement of a 25 percent reduction in vehicle mileage, as were also trucks engaged in the transportation of property wholly within the boundaries of any industrial or manufacturing plant, or between units of such plant separated only by a public highway, when such transportation is an integral part of the business of such industrial plant. Such trucks were also made exempt from the obligation to be registered and to offer service by rental or lease when traveling light.

Effective July 29, trucks engaged exclusively in the transportation of the products of a mining, smelting or refining enterprise, if such enterprise is operated under a Preference Rating Order or a Certificate of Operation issued by the War Production Board, from a mine to the preparing, smelting, or refining facility or to the nearest adequate rail or water shipping point, or between preparing, smelting, or refining facilities, or when operating exclusively in the transportation of waste products of such a mining, smelting, or refining enterprise to the point of disposal of such waste products, were relieved from compliance with the 25 percent reduction in vehicle mileage, as well as from the registration and rental provisions of the ODT Order No. 17.

### Streamlining WPB

Still further reorganizing the War Production Board for the long pull and dividing the administrative load, Donald M. Nelson has appointed able William L. Batt as vice chairman of the Board where he will function as general assistant and deputy to Mr. Nelson. As vice chairman in charge of program determination he named James S. Knowlson, previously director of industry operations. Amory Houghton, appointed director general of operations, will supervise the industry and commodity divisions and the regional offices of the War Production Board. Mr. Houghton has, in turn, appointed four assistants who will act as a WPB Operations Control Board

advising him on policy matters. Appointed as his immediate assistant is C. H. Matthiessen, Jr., previously chief of the Bureau of Priorities. For field operations of the WPB the appointee is Wade E. Childress, former regional director at Kansas City. Supervision of WPB operating branches has been assigned to Alex J. Henderson, who was director of the materials division. As deputy director for priorities control, J. A. Krug will administer the production requirements plan and other methods set up by WPB to control the flow of materials to war plants.

### Graph Shows Price Control

A chart issued by the Office of Price Administration presents the operation of the control over prices of selective commodity groups during the 33 months ending April, 1942. The graph shows that in the case of metals and metal products, 92 percent of which were under control on April 18, 1942, price increases were held to 12 percent over the 33-month period. In sharp contrast, farm products, only 4 percent controlled by last April, runs about 72 percent during the same period.

### Utilities Elkhorn Announces Developments

J. E. Bowman, vice president of the Utilities Elkhorn Coal Company, Pikeville, Ky., has announced that his firm has approved the expenditure of more than \$150,000 for the development of its coal, gas and oil properties located in Pike County, Ky. These developments will include a 1,000-ft. aerial tramway, and will materially increase their production.

### USBM Opening District Office in Montana

Notice was received in late July of the appointment of E. W. Newman, of Helena, Mont., as district engineer for the U. S. Bureau of Mines. It is known that the Bureau is establishing eight new district offices to cover ten western states.

The Bureau is being reorganized to further war production of minerals. New offices are being set up to provide a complete service for mine operators and prospectors, including preliminary examination of properties, geological and metallurgical studies, ore-testing and analyses. Each office will be staffed by 6 to 10 engineers, according to Regional Engineer S. R. Zimmerly, of Salt Lake.

## SIMPLICITY GYRATING SCREENS

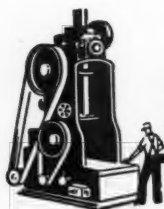
Use the correct basic principle of Positive Eccentric Action, produced by a solid shaft with the counter-balanced machined directly thereon, an exclusive patented Simplicity feature.

Other Simplicity features are the special rubber corner supports, screen cloth in tension four ways over a doubly crowned screen deck, and sturdy all steel construction with each machine finished in every detail.

Simplicity Gyrating Screens are available in sizes from a 2' x 3' up to a 5' x 12' in single shaft assemblies; built in one, two, three, and four decks; as standard inclined types and also as low head types, where desired.

*Descriptive Bulletin Available*

**SIMPLICITY ENGINEERING CO.**  
**DURAND, MICHIGAN**

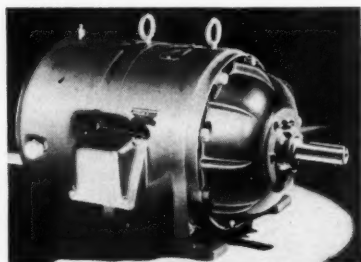


# MANUFACTURERS' Forum

## New Motors for Magnesium Dust Locations

A new line of polyphase induction motors in sizes from 1 to 20 hp., NEMA frames 203 to 326 inclusive, suitable for use under magnesium dust conditions, has been announced by the General Electric Company, Schenectady, N. Y. Labeled as suitable for Class II, group E locations.

The new line has been developed to meet a need brought about by the extensive use of magnesium and aluminum in war production. In many



cases, motors are being subjected to these metals in the form of fine powder, as used in incendiary bombs and for other military purposes, or from castings during grinding or polishing operations. Since these dusts are extremely combustible, they present a hazard classified by the National Electrical Code as Class II, Group E, requiring special motors and control.

These motors are totally enclosed, with a nonventilated construction in the smaller ratings and a fan-cooled construction above 2 hp. Simple cast iron end shields, stator frames, and fan housings make possible dust tightness without complicating assembly or disassembly.

## New and Improved Black Light Lamps for Scheelite Prospectors

Announcement of a complete new and improved line of Mineralight black light lamps for Scheelite prospectors and miners is announced by



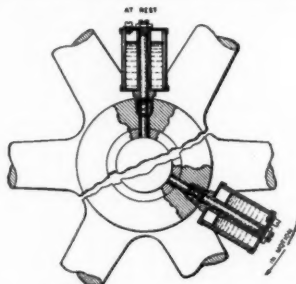
Ultra-Violet Products, Inc., 5205 Santa Monica Boulevard, Los Angeles, Calif.

Mineralight models include a wide

variety—from all sizes of portables for general utility to larger types for mine installations to speed up sorting and grading of ore. The company has developed and placed on the market the lightest and most compact ultra violet ever made, actually weighing less than 4 lb. including battery. The new lamps feature higher efficiency, greater intensity of ultra violet rays, as well as many other advantages such as built-in regular flashlight with selector switch, self-contained lamp and transformer, etc.

## New Pulley Oiler

For use on loose pulleys, idler pulleys, clutches, eccentrics, and similar rotating machine parts, a new wick type lubricator has been announced



by the Oil-Rite Corporation, 34665 13th Street, Milwaukee, Wis. It is designed to deliver a constant, positive, and regulated amount of filtered oil to shaft or bearing while pulley is in operation, and to prevent oil waste when pulley is idle. The reserve supply of oil is always visible.

This new lubricator consists of a simple glass oil reservoir, mounted on a hollow metal stem. This stem is sealed from the oil in the reservoir, except for two small ports at the very top. Inside the stem is a cylindrical felt wick, which extends through the pulley hub to rest directly on the shaft. A compression spring is wrapped around the wick to hold it firmly in position against the shaft.

As the pulley rotates, and the lubricator with it, centrifugal force throws the oil against the top of the reservoir, and into the two ports in the stem. These admit oil to the wick, which filters out all dirt and sediment, and conducts the oil directly to the face of the shaft.

The amount of oil to be delivered to the shaft or bearing is regulated by means of a small plug which controls the area of the oil ports. Reservoir is filled from the top, quickly and easily. Five standard sizes are available—capacities from ¼ to 2½ oz.—for standard tappings from ⅜ to ¼ in.

## Naval "E" Awarded to Union Wire Rope Corporation

The Union Wire Rope Corporation of Kansas City, Mo., is the newest member of the industry to be awarded the naval "E" for excellence in recognition of outstanding service to the war effort. The official presentation of the blue burgee was made in a ceremony at the Kansas City plant on Wednesday, July 8.

Rear Admiral W. C. Watts presented the blue banner to M. G. Ensinger, president of the corporation. John Haglein, the oldest employee of the company, accepted the "E" buttons for other employees.

Business leaders of the Kansas City area and a large delegation of navy and army officers were among the hundreds present. Distinguished guests included Captain S. C. Loomis, inspector of naval materials for the ninth naval district; Commander D. W. Tomlinson; Mayor John B. Gage, of Kansas City; Governor Payne Rafter, of Kansas; Dwight H. Brown, secretary of state for Missouri; R. H. Bartlett, chairman of the board of the Union Wire Rope Corp.; E. H. Reedy and Phil D. Morelock, board members.

The third regiment band, American Legion color guards and the fife and drum corps of the Northeast Youth Club added color to the occasion. Later in the day, a cocktail party and banquet were given by the chamber of commerce in honor of Union Wire Rope officials and distinguished visitors.

## Moves Mountain of Coal

Union Collieries Company of Pittsburgh, Pa., is operating a fleet of five Fruehauf trailers with 20-yd. hopper-type dump bodies capable of transporting 1,500 yd. of coal per day. The five trailers transport small lump coal from tipple to dump-



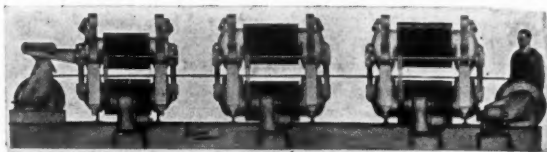
ing site. Each of the trailers makes 15 trips in a 16-hour day. So efficiently are these operated that they dump their load while in transit in a period of only one minute. The big trailers are pulled by Brockway tractor units and represent just about the last word in transportation of bulk coal over the highway.

## Improved Wetherill Magnetic Separator

Radical redesigning of its type "R" Wetherill cross belt magnetic separator has been announced by the Stearns Magnetic Mfg. Co., Milwaukee, Wis.

ing device onto the main belt and the magnetic portions being intercepted and carried to special chutes on the side.

Materials varying in magnetic per-



The new type "R" separator now has a distinctively modern appearance insofar as structural frame design is concerned. Elimination of much of the heavy frame work which formerly supported the coils has been accomplished without in any way weakening the structural advantages of the unit.

The Stearns-Wetherill type "R" separator employs the cross belt method of magnetic separation, the material being fed by a special feed-

meability or the separation of magnetic material can be treated very readily on this type of separators. In many problems a clean-cut, sharp separation can be made, while in others, sufficient improvement can be effected to purify and lift the penalties imposed, creating a ready market for the product. The number of products produced depends on the number of magnets employed, each magnet producing two magnetic products.

## New Electronic Separator Concentrates Metallic Ore

To concentrate the metallic ore containing tin and other war metals from low grade deposits, an experimental electronic ore separator has been developed at the Westinghouse Research Laboratory which extracts the ore



suitable for smelting. If this separator is as efficient in connection with a commercial mining enterprise as in laboratory tests, it can be a valuable aid in easing America's tin shortage.

Most promising results with this new Westinghouse research development, according to G. W. Penney, manager of the Electro-Physics Division, have been attained with low-grade ore samples from a recently developed tin deposit in a southern state. This sample deposit containing 1 per cent tin separated by this device, yielded a concentration of metallic ore containing about 70 per cent tin.

## Mack Sponsors Truck Conservation Program

The honor of being the first in the nation to enroll in the U. S. Truck Conservation Corps, pledged to keep America's trucks rolling till victory, goes to 350 truck drivers of Albany, N. Y. The ceremony took place on July 22, at the Albany branch of the Mack Truck Co., where the drivers attended a truck conservation meeting, one of a nation-wide series being conducted by Albert G. Crockett, transportation engineer of the Mack company.

The Albany gathering was representative of similar meetings now being addressed by Mr. Crockett and sponsored by Mack in cooperation with the Office of Defense Transportation. In his talks, Mr. Crockett stresses the great responsibility placed on drivers and mechanics to give special maintenance attention to their equipment. A feature of the meetings is a display of actual parts ruined by neglect and abuse which serve as a forcible reminder of the practical way in which drivers and mechanics can help the war effort by conserving critical materials and also lengthening the life of irreplaceable parts.

## New Conservation Booklet

To help America's "War on Waste" program, Allis-Chalmers Mfg. Co., Milwaukee, has just published a new conservation booklet on office supplies.

Entitled "It's the Little Things That Count," the booklet points out the importance today of conserving even the most minor office supplies. Further, it goes into detail on the best methods for prolonging the life of items commonly used in offices. Copies of the booklet are available upon request.

## CATALOGS AND BULLETINS

**RAIL CLAMPS.** *Robins Conveying Belt Co.*, Passaic, N. J. Bulletin 114 describes and illustrates features of the company's line of rail clamps for use in loading and unloading of coal and ore. 18 pp.

**REMOVING BOILER RUST.** *Water Treatment Co. of America*, 1159 Hodgkiss Street, N.S., Pittsburgh, Pa. The company offers a new booklet explaining the functions of its "Baerite" organic formulas in balancing waters which cause rust, scale, corrosion, foaming, priming and other boiler troubles. 8 pp.

**ROCK DRILLS.** *Gardner-Denver Co.*, Quincy, Ill. Bulletin S 73 illustrates and lists specifications of the company's S 73, 67-lb. sinking drill. 4 pp.

Bulletin S 33 describes construction features of its S 33, 31-lb. sinking drill. 4 pp.

Bulletin D 73 describes and illustrates its Model D 73 light drifter, with 2 3/4-in. bore. 4 pp.

Bulletin CF-1 describes and illustrates the company's CFS9H improved continuous-feed drifting drill.

*Ingersoll-Rand Co.*, 11 Broadway, New York, N. Y. Form 2722 describes and illustrates the manufacturer's balanced Stopehamers. Nos. R-48, R-58 and HR-48. Pp. 16.

**RUBBER PUTTY.** *The B. F. Goodrich Co.*, Akron, Ohio. Leaflet 9765 describes properties and uses of the manufacturer's Plastikon rubber putty. 1 p.

**SAFETY EQUIPMENT.** *E. D. Bullard Co.*, San Francisco, Calif. The company has issued a folder entitled "How to Select Head Protection at a Saving." 4 pp.

*Mine Safety Appliances Co.*, Pittsburgh, Pa. Bulletin No. G5 describes and illustrates the manufacturer's line of protective hats, safety belts, respirators, electric flood lights, fire blankets and other equipment for use in mines and plants. 8 pp.

**SCRAPERS.** *Ingersoll-Rand Co.*, 11 Broadway, New York, N. Y. The company recently announced a book entitled "Modern Methods for Scraper Mucking and Loading." The book is well illustrated and is divided into four parts. (1) Scraper Hoist Equipment; (2) Metal Mining Methods; (3) Coal, Non-Metallic and Miscellaneous Mining Methods; and (4) Hoists and Engineering Data. Pp. 184.

**SHAFT AND HOUSING DESIGN.** *New Departure*, Bristol, Conn. Part Two is a comprehensive bulletin issued by the company's engineering staff, describing the details of shaft and house design relative to the application of ball bearings. Pp. 24.

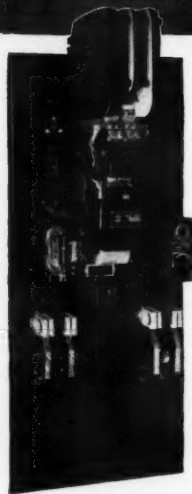
**STEEL PARTS.** *Alloy Steel & Metals Co.*, 1802 E. 55th Street, Los Angeles, Calif. Bulletin 117 describes and illustrates the company's line of steel parts for crusher jaws, mill hammers, crawler shoes, mill liners, tractor rims and roll shells. Pp. 4.

**WIRE ROPE.** *Wire Rope & Strand Manufacturers Assn.*, 627 Shoreham Bldg., Washington, D. C. The association recently issued an attractively illustrated brochure entitled "Wire Rope and Its Place in War Production." Chapters are devoted to describing the use of wire rope in mining and quarrying, construction, transportation and other industries. Pp. 29.



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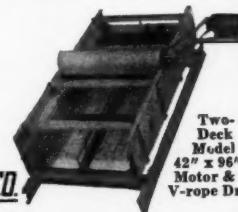
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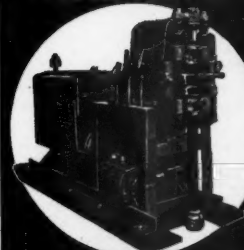
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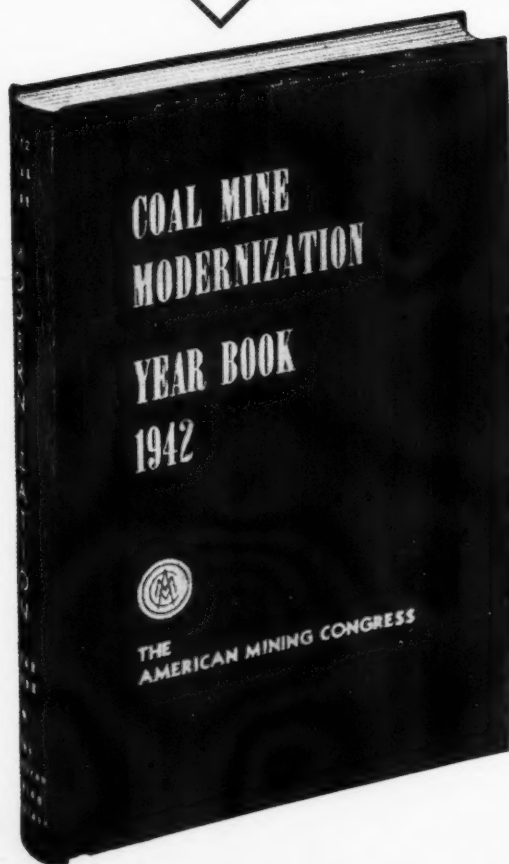


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